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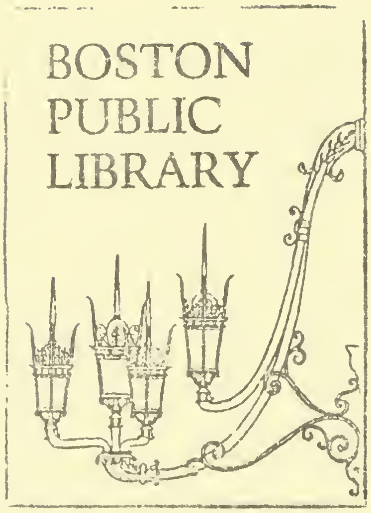

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BACK BAY FENS
PRESERVATION MASTER PLAN

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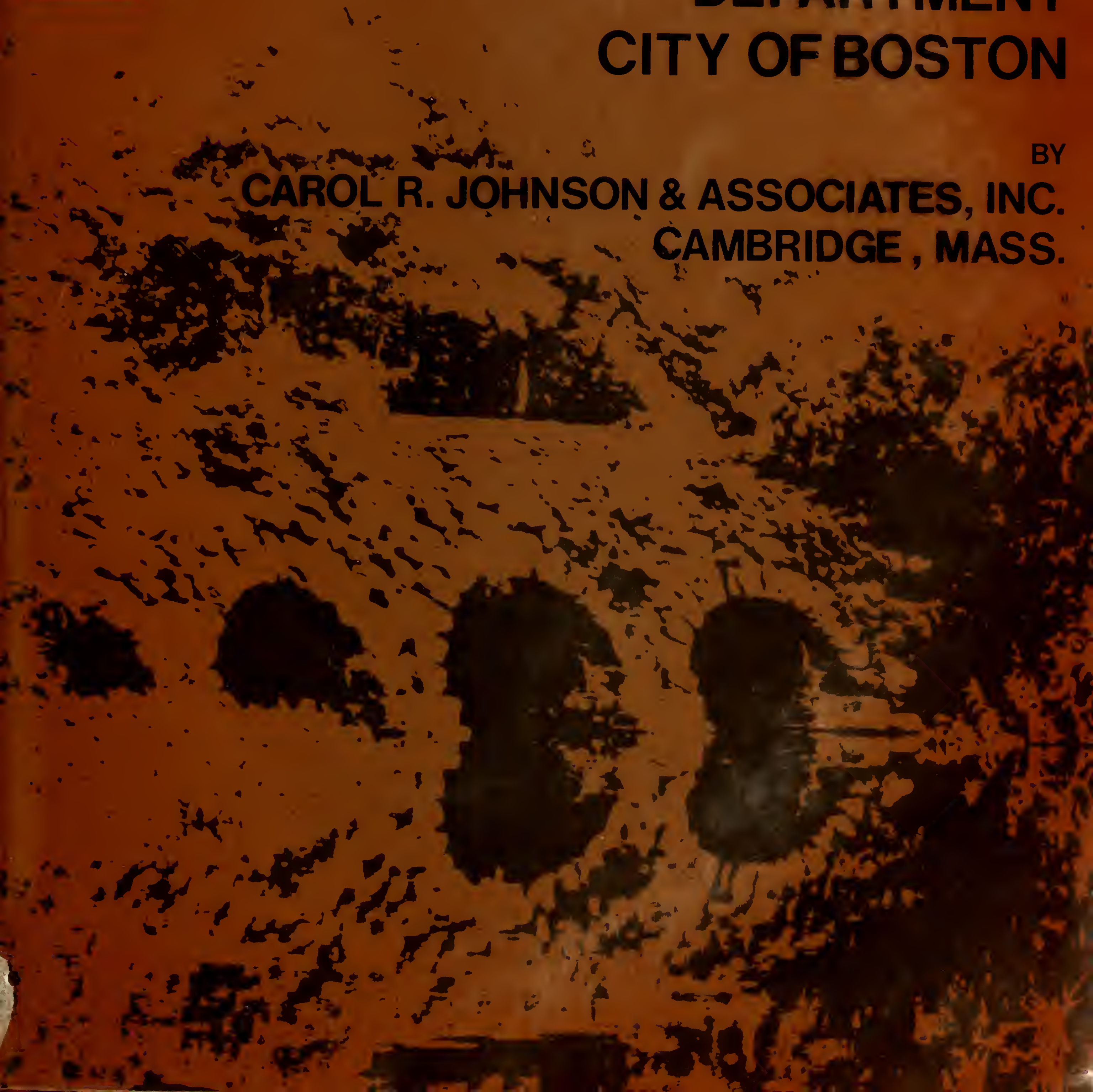
PREPARED FOR

PUBLIC
FACILITIES
DEPARTMENT
CITY OF BOSTON

BY

CAROL R. JOHNSON & ASSOCIATES, INC.
CAMBRIDGE, MASS.



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BACK BAY FENS
PRESERVATION MASTER PLAN

Prepared for

PUBLIC FACILITIES DEPARTMENT
CITY OF BOSTON

by

Carol R. Johnson & Associates, Inc.
Cambridge, Massachusetts

Victor E. Hagan, Director
Public Facilities Department
City of Boston

January, 1977

Carol R. Johnson & Associates, Inc.

Landscape Architects
Site Planners

133 Mount Auburn Street
Cambridge, Mass. 02138
(617) 868-6115 868-3576

January 21, 1977

Mr. Victor E. Hagan, Director
Public Facilities Department
One City Hall Square
Boston, Massachusetts 02201

Dear Mr. Hagan:

I am pleased to submit this report entitled "Back Bay Fens Preservation Master Plan" for your consideration. The report is the result of nearly five months of research and design work to establish guidelines for future park improvement projects.

The Back Bay Fens Preservation Master Plan was prepared during the fall and winter of 1976-77, specifically, September 6, 1976 to January 21, 1977. Field investigations were conducted during the months of September, October and November. Also used in the preparation of this Master Plan was information on the initial plan by Frederick Law Olmsted, Sr. in 1879, later plans by Arthur A. Shurtleff in 1921, and a recent planning effort by the Metropolitan Area Planning Council in 1973.

The Preservation Master Plan reinforces desirable features of early park layout while suggesting contemporary park improvements designed to meet the needs of park users today and in the future. It is the plan's objective to set guidelines for the City of Boston's preservation and improvement efforts. The plan was prepared in cooperation with the City of Boston Public Facilities Department, Parks and Recreation Department, and the Metropolitan District Commission.

In summary, the Master Plan contains the following recommendations:

--The reversion of certain existing streets to parkland, specifically the east lane of Park Drive and the whole of Agassiz Road which are shown as landscaped paths in park use.

--The strengthening of plantings and restoration of pathways around the perimeter of the park as originally set forth in early conceptual drawings by Olmsted.

--The excavation of the Muddy River channel from Higginson Circle through the Sears parking lot to allow boat access.

--Selective clearing of shoreline Phragmites reed growth to open views and expand passive park areas.

--The formation of islands to enhance the park experience.

--Replacement of existing bridges and construction of new boardwalks to improve pedestrian circulation.

--Improvements in the Athletic Field area including relocation of the basketball courts.

Estimated 1977 construction cost for all items is $3,812,840 including costs associated with both the City of Boston and the Metropolitan District Commission management jurisdictions. Costs allocated only to the City of Boston are $3,217,880. The first phase of construction is proposed to be a parkwide program of landscape maintenance and planting to include clearing, pruning, planting, grading and sodding (selected areas). The first phase is budgeted at $350,000.

The Back Bay Fens is one of Boston's fine historic parks; a link in Olmsted's "Emerald Necklace." We are honored to have had this opportunity to contribute toward restoration and improvement of this unique open space.

Sincerely,

Carol R. Johnson

CRJ/pdl

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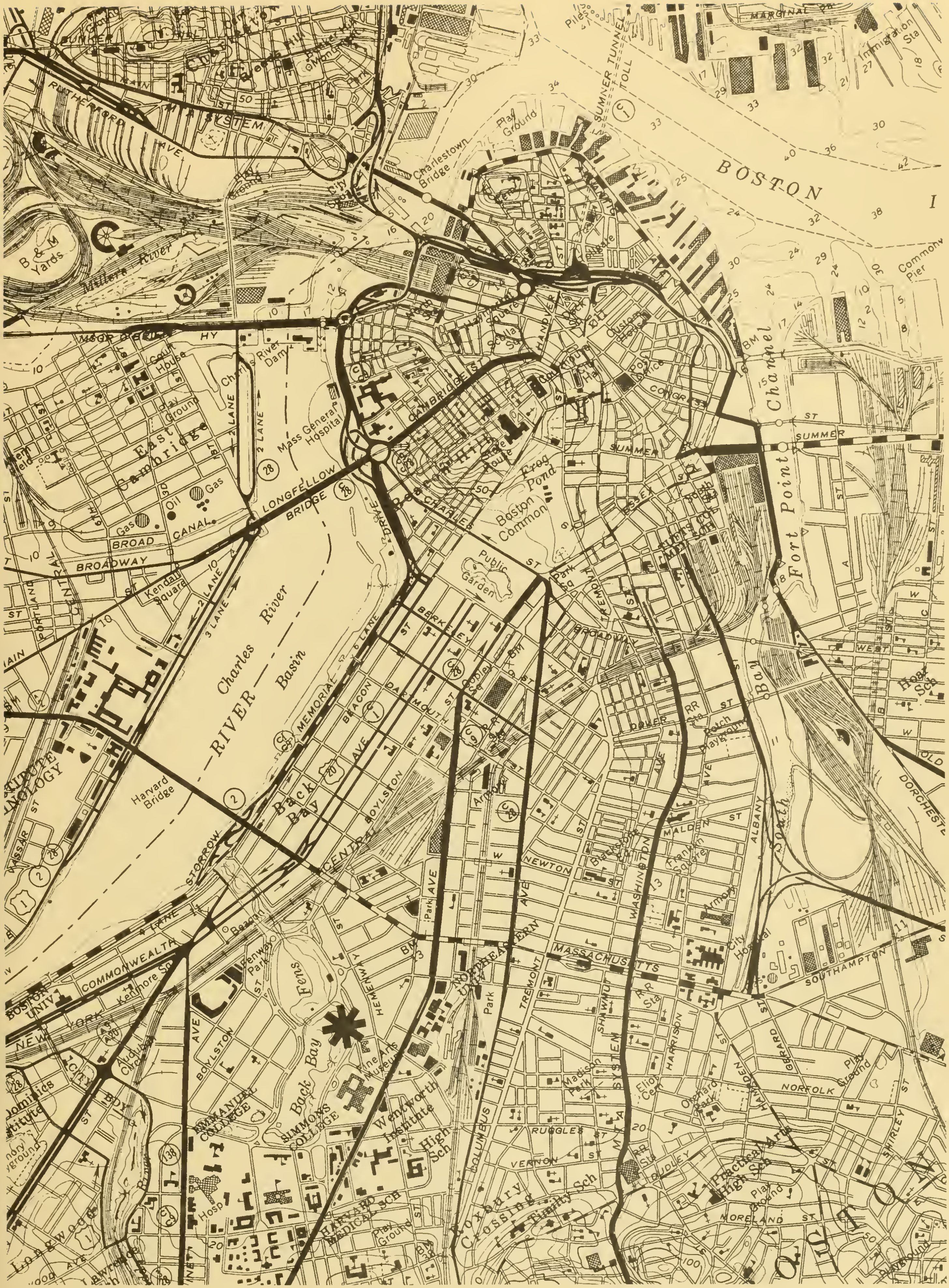
B. Definition of MDC/City of Boston Jurisdiction
C. Control of Phragmites australis

GENERAL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Play Ground
B & M Yards
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Court House
Charles River Dam
East Cambridge
Mass General Hospital
Longfellow Bridge
Broad Canal
Broadway
Kendall Square
Main
Portland
Central
Charles River Basin
River
Harvard Bridge
Vassar St
Institute of Technology
Storrow
Memorial Drive
Beacon
Back Bay
Commonwealth
Kenmore Sq
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New York
Audubon Circle
Dominican Institute
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Simmons College
Emmanuel College
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High Sch
Harvard Medical Sch
Hosp
Play Ground
Roxbury Crossing
Trinity Sch
Columbus
Tremont
Northeastern Univ
Massachusetts
Huntington
Boylston
Dartmouth
Berkeley
Copley Sq
Armory
Public Garden
Boston Common
Frog Pond
State House
Park Sq
Charles
Cambridge St
Scollay Sq
Hanover
Custom House
Post Office
Congress
Summer
Essex
Tufts Col Med Sch
Washington
Shawmut
Harrison
Albany
Malden St
Newton
Dover
Frank Square
Blackstone Square
City Hospital
Southampton
Eliot Cem
Madison Park
Orchard Park
Ruggles
Vernon
Dudley
Practical Arts High Sch
Moreland St
Hampden
Gerard
Norfolk
Shirley St
Fort Point Channel
South Bay
Dorchester
West
Old
Hood Sch
Roxbury

GENERAL

The Back Bay Fens is located in the western portion of the City of Boston, bounded by Park Drive on the west and the Fenway on the east. The park encompasses the Muddy River and sloping landscaped grounds bordering each side of the water channel. See location map on previous page.

The Preservation Master Plan has been prepared for the site which includes parkland laying between Richardson Bridge (Boylston Street) and the Park Drive end of the Sears and Roebuck Company parking lot containing a total of 71 acres $\underline{+}$. Significant institutions which border the park include the Museum of Fine Arts, the Gardner Museum, Boston State College, Northeastern University, Emmanuel College, Simmons College. Remaining areas are occupied by apartments.

The Fens is used for both passive and active recreation by all ages including the elderly, and college students who live and study in the area. Recreational pursuits vary in each section of the park. In the northern portion of the park, play equipment at the Mother's Rest area is frequently used by young children under the direction of adults, while nearby fire control personnel overflow parking facilities and maintain continual vehicular activity around the headquarters building.

Across the Muddy River to the west, the Victory Gardens provide many city residents with an opportunity to work the soil and produce vegetables and flowering plants for their enjoyment and that of passersby.

A mixture of park uses occurs south of Agassiz Road where the parkland contains both quiet gardens and an expansive athletic field. The Rose Garden and War Memorial area comprise well maintained lawns and shade trees for casual walks and sitting and reading areas. The area is frequently used by young artists, surveying classes, and dog owners; a campus atmosphere exists through this portion of the park.

Directly adjacent to the Rose Garden lawn, the basketball courts and athletic field provide stark contrast with the groomed passive areas just described. The courts and field are extensively used for both informal play and formal competitions. Both local colleges and city leagues use the area for baseball, football, soccer and even ice skating during the winter months.

Interspersed through the remainder of the park are secluded sitting areas in shaded grass and park benches bordering stone dust paths for walking or relaxing. The pathways and sidewalks are used by students walking between living areas and college campuses which are frequently on opposite sides of the park. The heaviest pedestrian traffic is experienced on walks that connect Evans Way to Jersey Street entrances, the Forsyth Street entry to Jersey Street, Agassiz Road sidewalks, paths on the Higginson Circle fill area, and the Victory Garden Walk, parallel to Park Drive.

Park maintenance has been outstanding in the passive area surrounding the Rose Garden and War Memorial. Pruning, hedge trimming, frequent mowing, and spraying are evident in the well manicured appearance. The Rose Garden is immaculate and a tribute to the responsible grounds crew. In contrast, however, nearly all other areas display a need for greater maintenance. Vegetation has become overgrown, blocking views necessary for safety and preventing a pleasing park experience. The shoreline Phragmites growth is a very special maintenance problem, requiring carefully planned strategy and continual removal efforts. Maintenance is the major problem other than water quality in the park today. The park condition has deteriorated to a low point that only a major parkwide program can correct.

Water quality in the Back Bay Fens is of critical concern to the City of Boston. Since 1972 the City has conducted extensive studies to restore the Back Bay Fens Pond to a body of usable recreational water. Strategy for solving the pollution problem includes: diversion of sewage flows away from the Fens' waters, hydraulic dredging of the Muddy River to remove sludge sediment, the construction of a sewage retention facility to collect water solids before they reach the Fens pond, water aeration, and the establishment of an artificial flow through the Fens by pumping Fens water into storm conduits at Brookline Avenue. (See Appendix A for a more detailed summary of pollution abatement proposals.)

The Back Bay Fens is under management jurisdiction of both MDC and city agencies. The Metropolitan District Commission maintains responsibility for the condition of all surrounding streets as well as a 25 foot wide perimeter surrounding the Fens parkland. This perimeter land includes curbing, sidewalks, stone dust paths, and the planting strip between the paths and the streets. The route of certain paths which are mainly within the perimeter extends into the interior of the park and back again, creating confusion in maintenance responsibility. The City of Boston is responsible for maintaining all of the interior land contained within these surrounding borders. (See Appendix B for a description of the jurisdiction.) Since the park is managed by both the City and the MDC, construction of park improvements and their maintenance requires coordination between agencies and work crews.

PHOTOGRAPH SURVEY OF PROBLEM AREAS

The pictures which follow depict typical problem scenes prevalent in the Back Bay Fens. They are included in this report as a documentation of existing features and an illustration of the serious nature of present conditions.

Curbing

1. Park Drive near lower Queensberry Street. Missing curb has caused deterioration of sidewalk-street median.

2. Park Drive at south entry to the Victory Garden. Missing curb and street drainage problems.

3. The Fenway opposite Simmons College. Park encroachment by vehicles, heavily worn pathway.

Erosion

4. Bank erosion opposite Worthington Street; exposed manhole.

5. Slope erosion at lower Victory Garden entry on Park Drive due to street flooding.

6. Eroded and worn slope next to Field House.

Paths & Walks

7. The Fenway opposite Simmons College. Heavily worn, poorly drained stone dust path.

8. Stone dust path near Fire Control Center; edging and drainage problems; vehicular use.

9. Lower stone dust path near Simmons College; overgrown vegetation, path resurfacing needed.

10. Jogging path near the Rose Garden.

Shoreline Reed Growth

11. Phragmites reeds at shoreline of Muddy River block pleasing views and water access.

Trash Containers

12. Trash barrel in the Victory Gardens.

Vehicular Intrusions

13. Agassiz Road. Heavy traffic lane through the park interrupts pedestrian circulation patterns.

14. Unused lane of Park Drive supplements parking space and detracts from Victory Garden entrys.

Park Access Points

15. Evans Way entry. Heavily worn paths and slopes.

16. Evans Way entry.

17. Higginson Circle entry looking toward Simmons College; worn paths.

18. Higginson Circle entry; curbing and pathway problems.

19. Victory Garden entry at Park Drive and Boylston Street intersection.

20. Japanese Temple Bell entry, near Rose Garden. Conflicting uses and inappropriate details compromise significant park entry.

21. Japanese Temple Bell Monument showing foundation settlement and inappropriate setting.

Parking

22. Fire Control Center parking lot; cars have encroached on parkland. Note heavy growth of Phragmites reeds preventing view to Muddy River.

23. Field House parking area needs paving and containment.

Specific Problem Sites

24. Mother's Rest. Children's play area is isolated with only one entrance; heavy growth of surrounding vegetation prevents views for safety and pleasure, lawn area is in need of reconditioning.

25. Athletic Field. Basketball courts conflict with main entrance to passive park areas.

26. Athletic Field. Important pedestrian walkway crosses basketball playing surface.

27. Athletic Field. Bleacher seats in disrepair.

28. Athletic Field. Heavily worn turf.

29. Parkland opposite Simmons College. Important vegetation is in need of maintenance.

30. South lagoon bridge site opposite Museum of Fine Arts.

31. Evans Way bridge (Long Bridge) in disrepair.

32. Gardner Museum. Parkland treatment does not reflect the significance of this adjacent structure.

33. Degritting plant opposite Gardner Museum to be removed.

34. Museum of Fine Arts viewed with Muddy River lagoon in the foreground. Features of the park design should recognize the Museum entrance.

35. Muddy River fill site opposite Emmanuel College. Continuity of water oriented park is interrupted by this fill site and another at Brookline Avenue.

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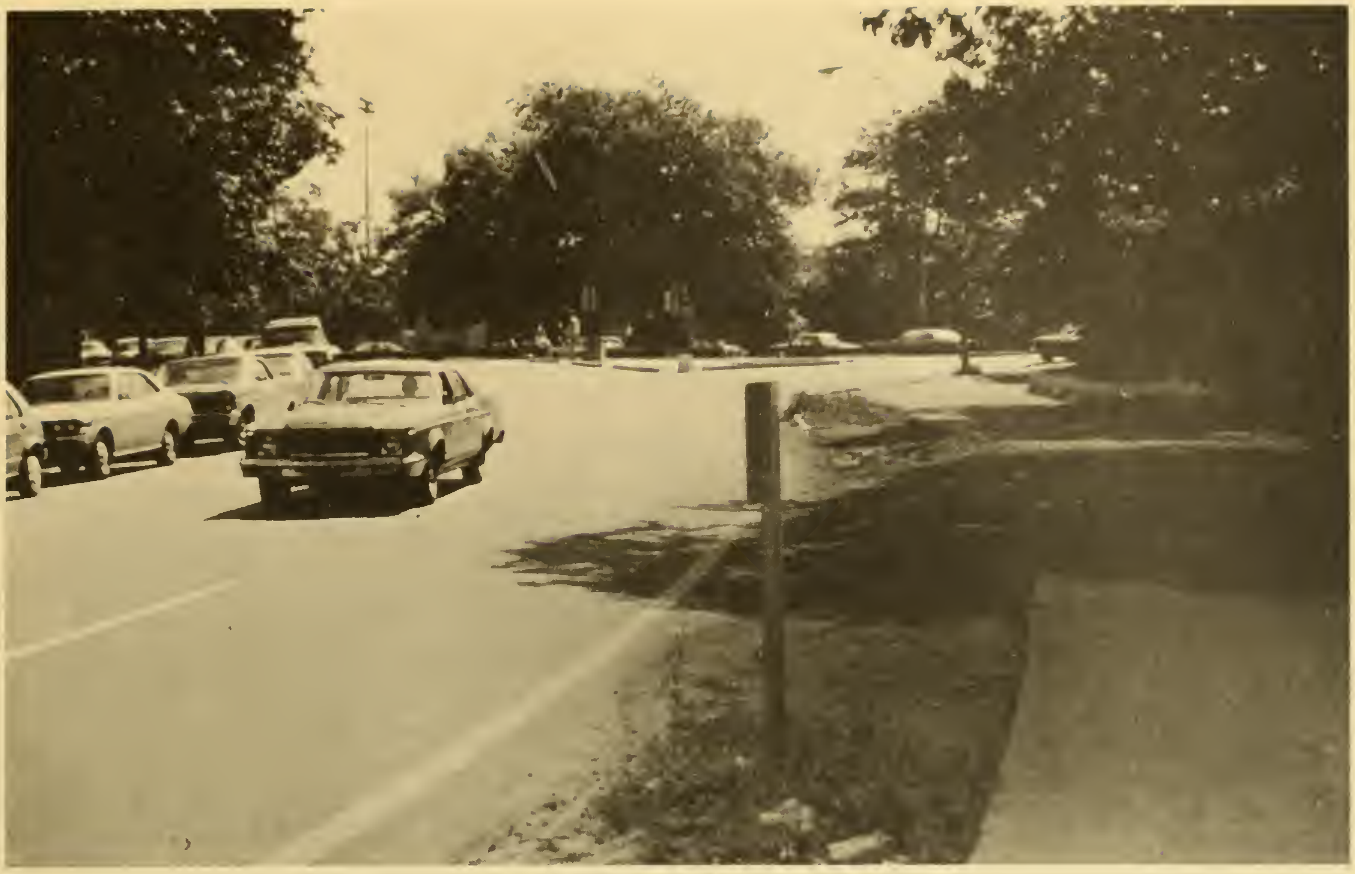

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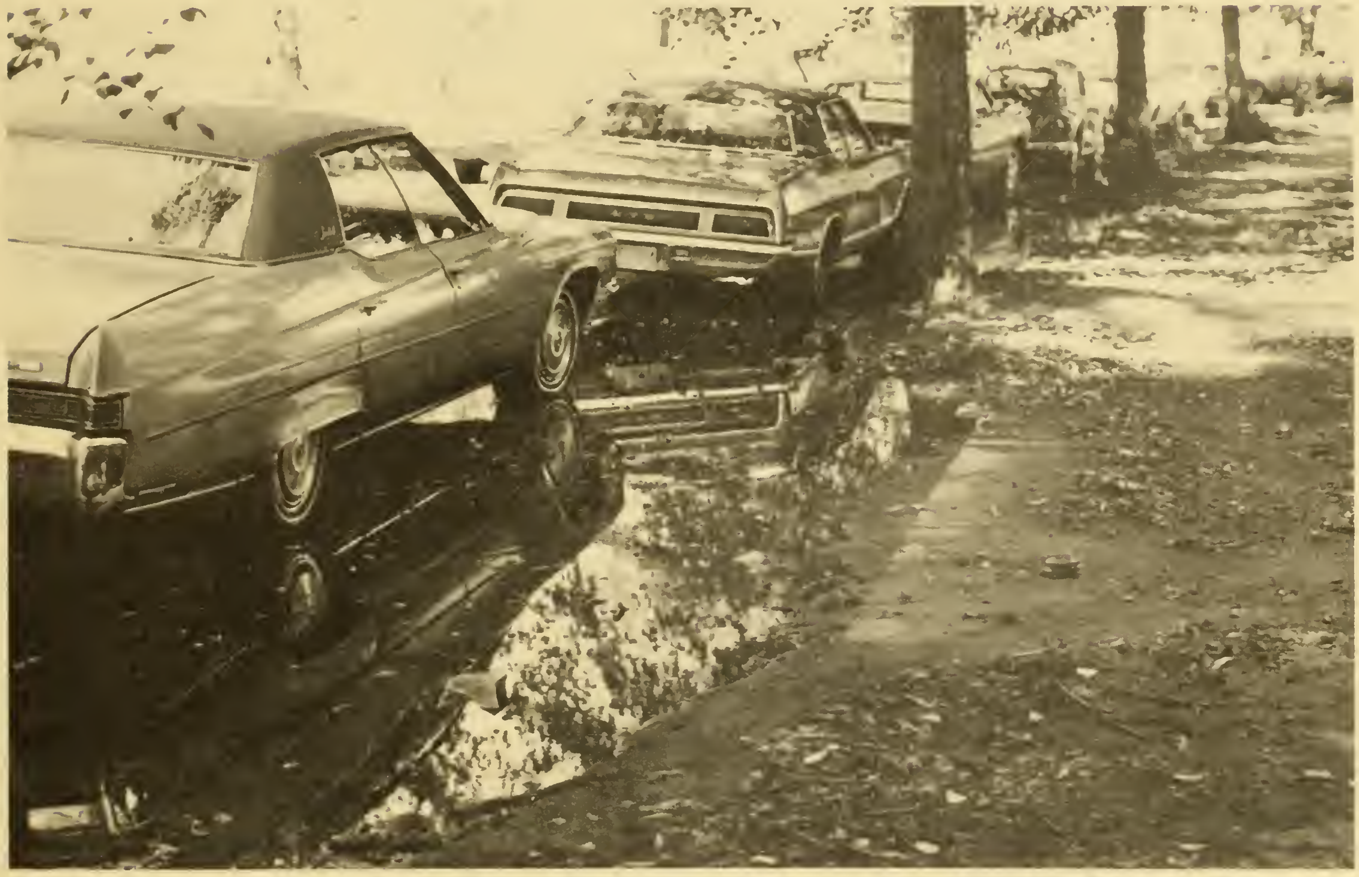

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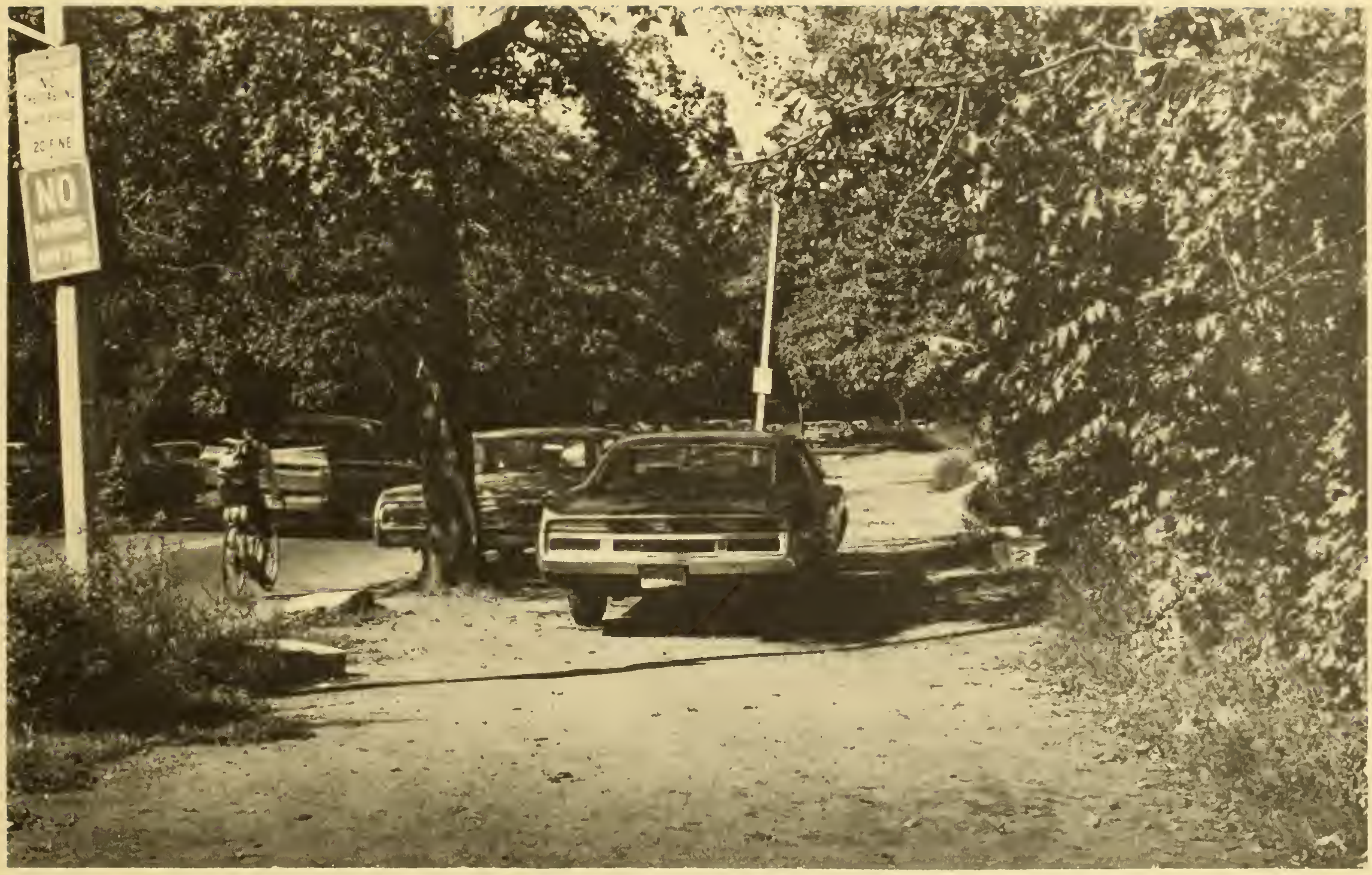

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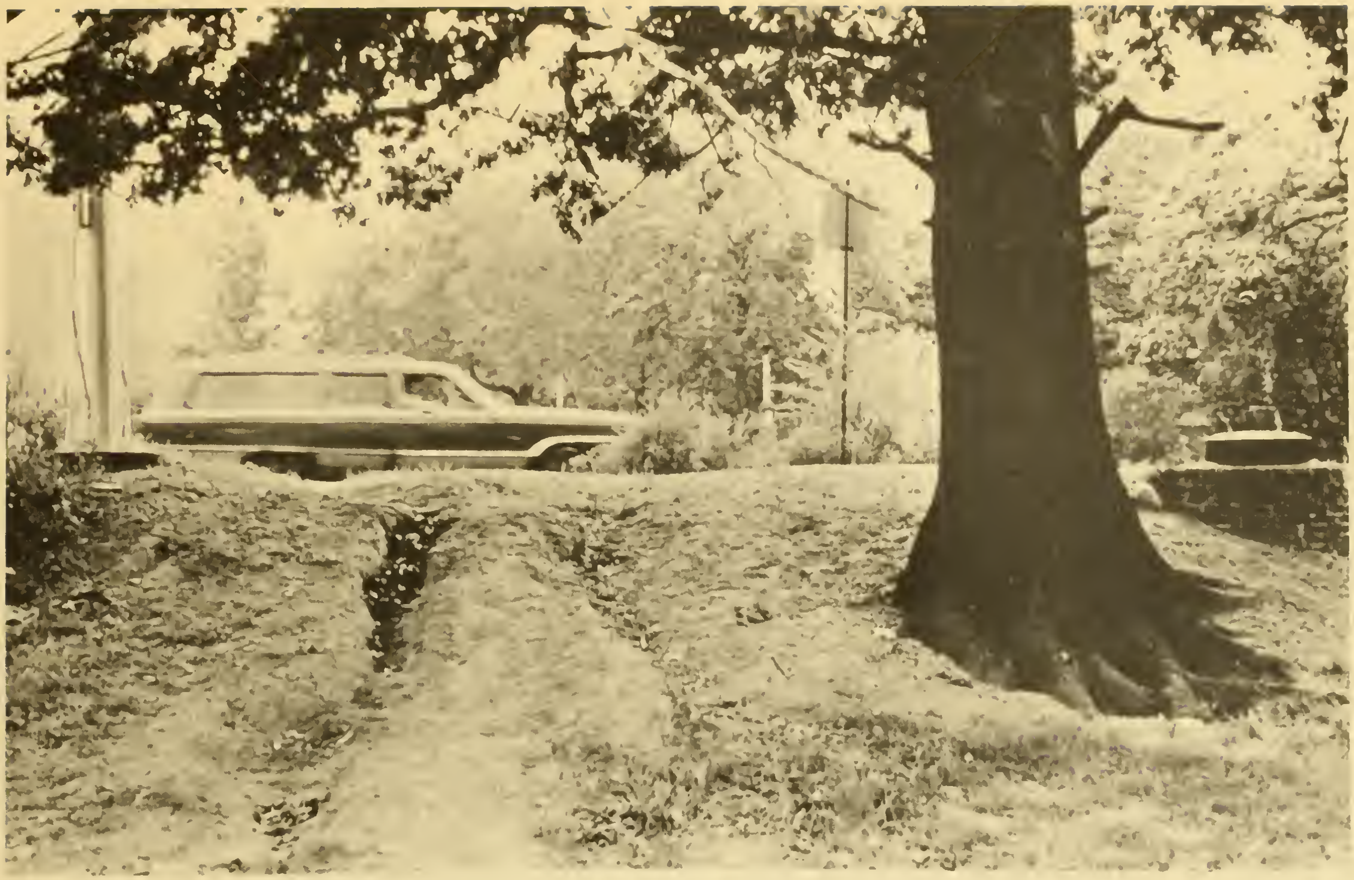

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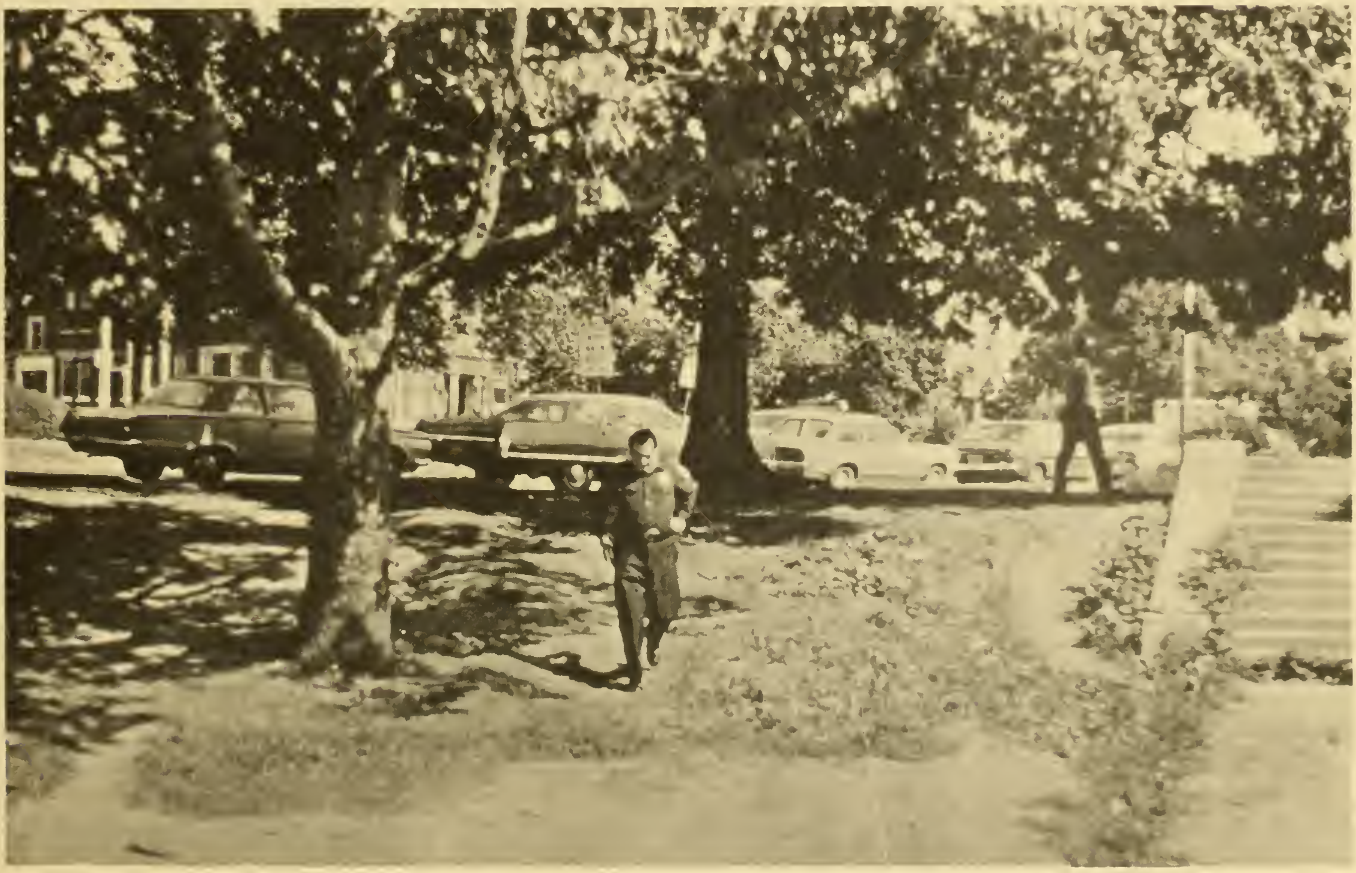

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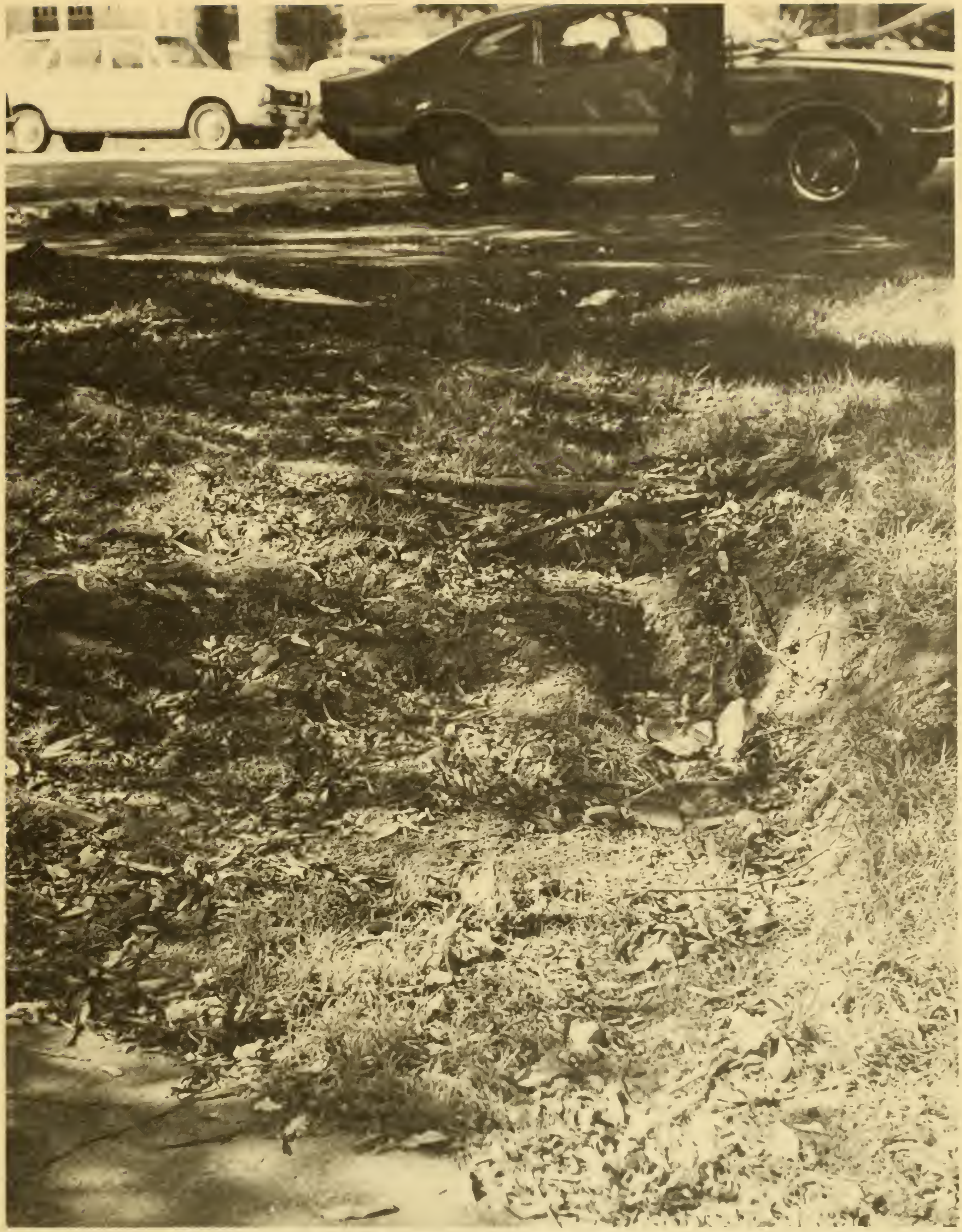

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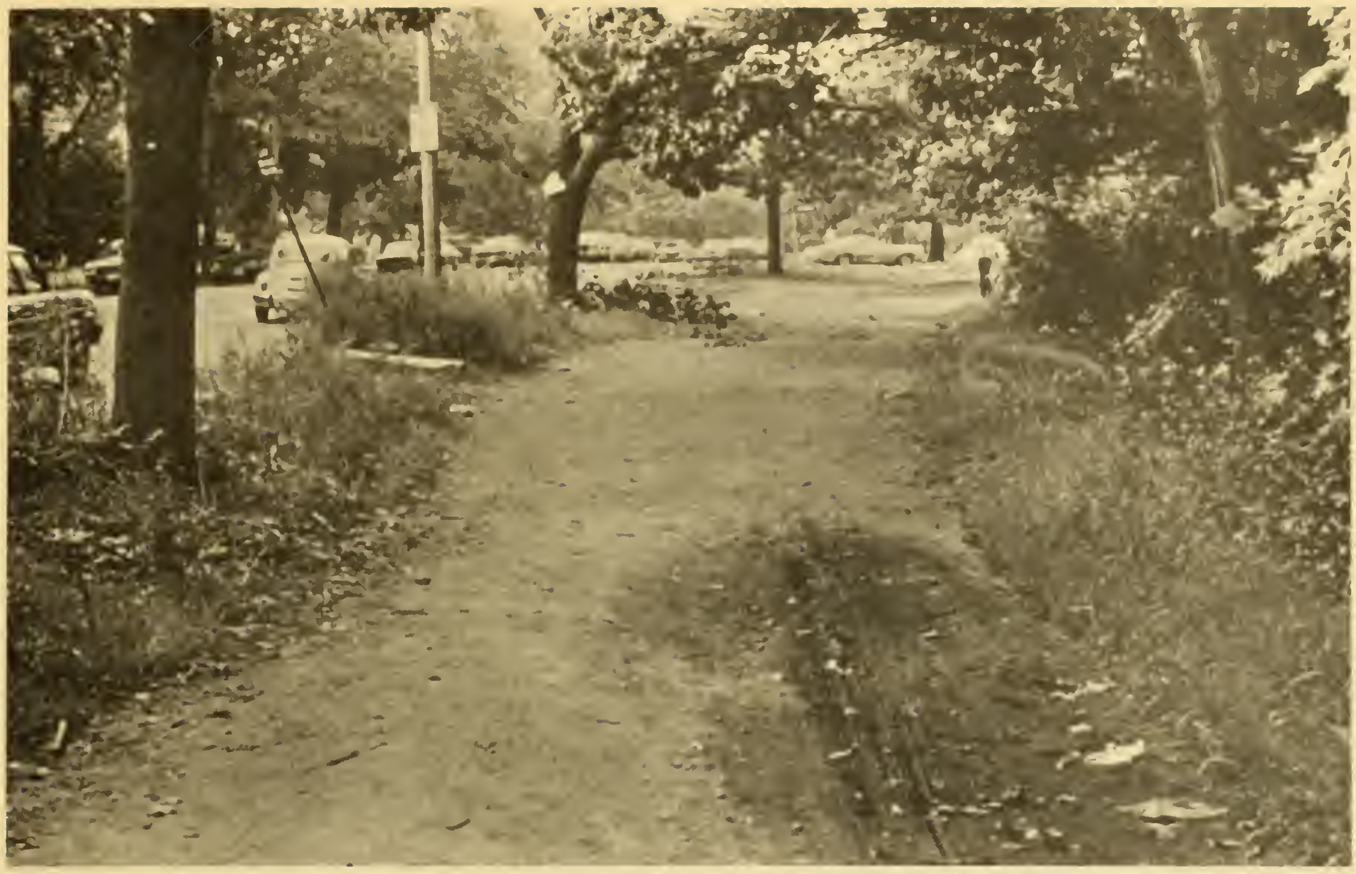

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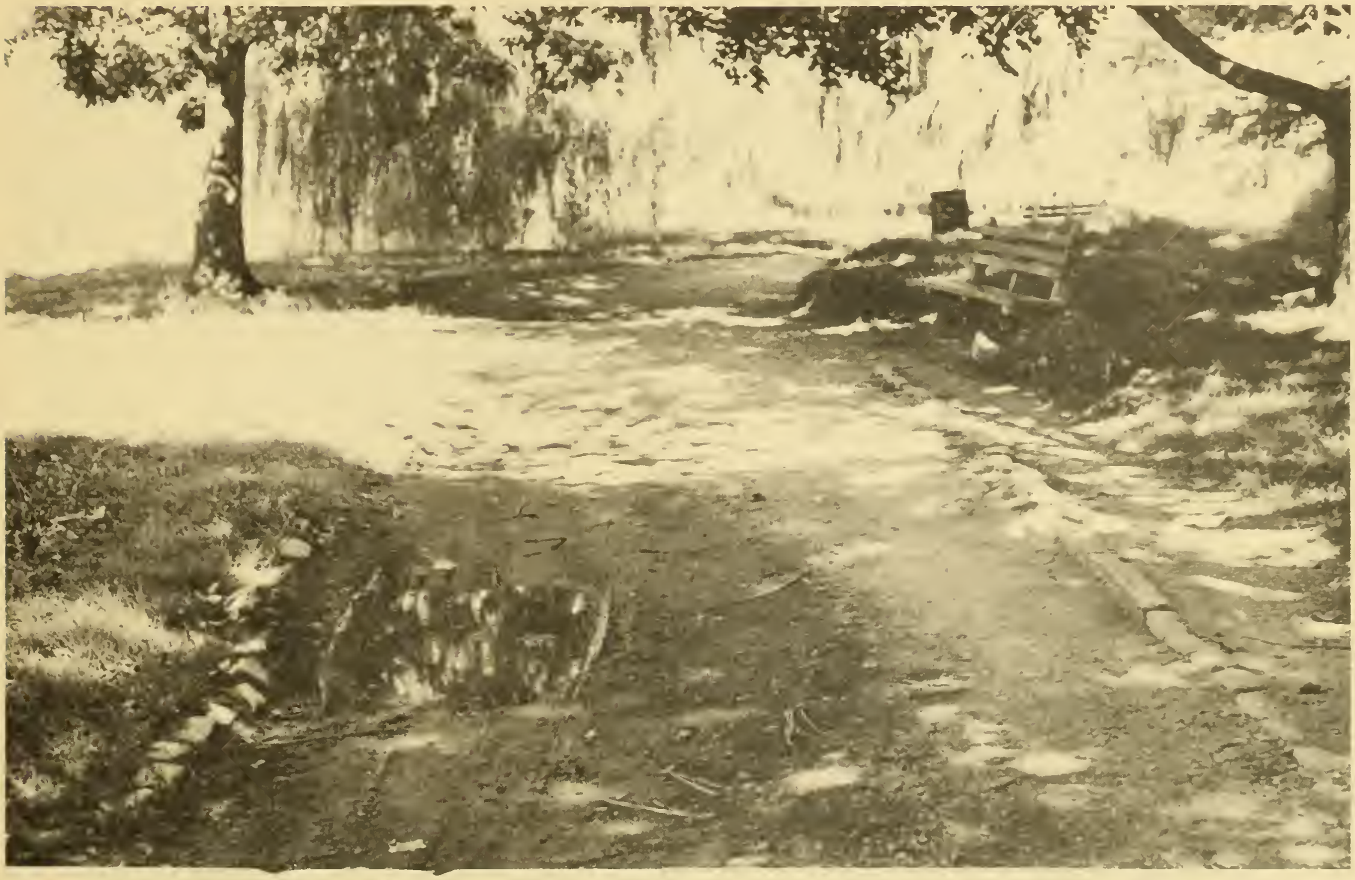

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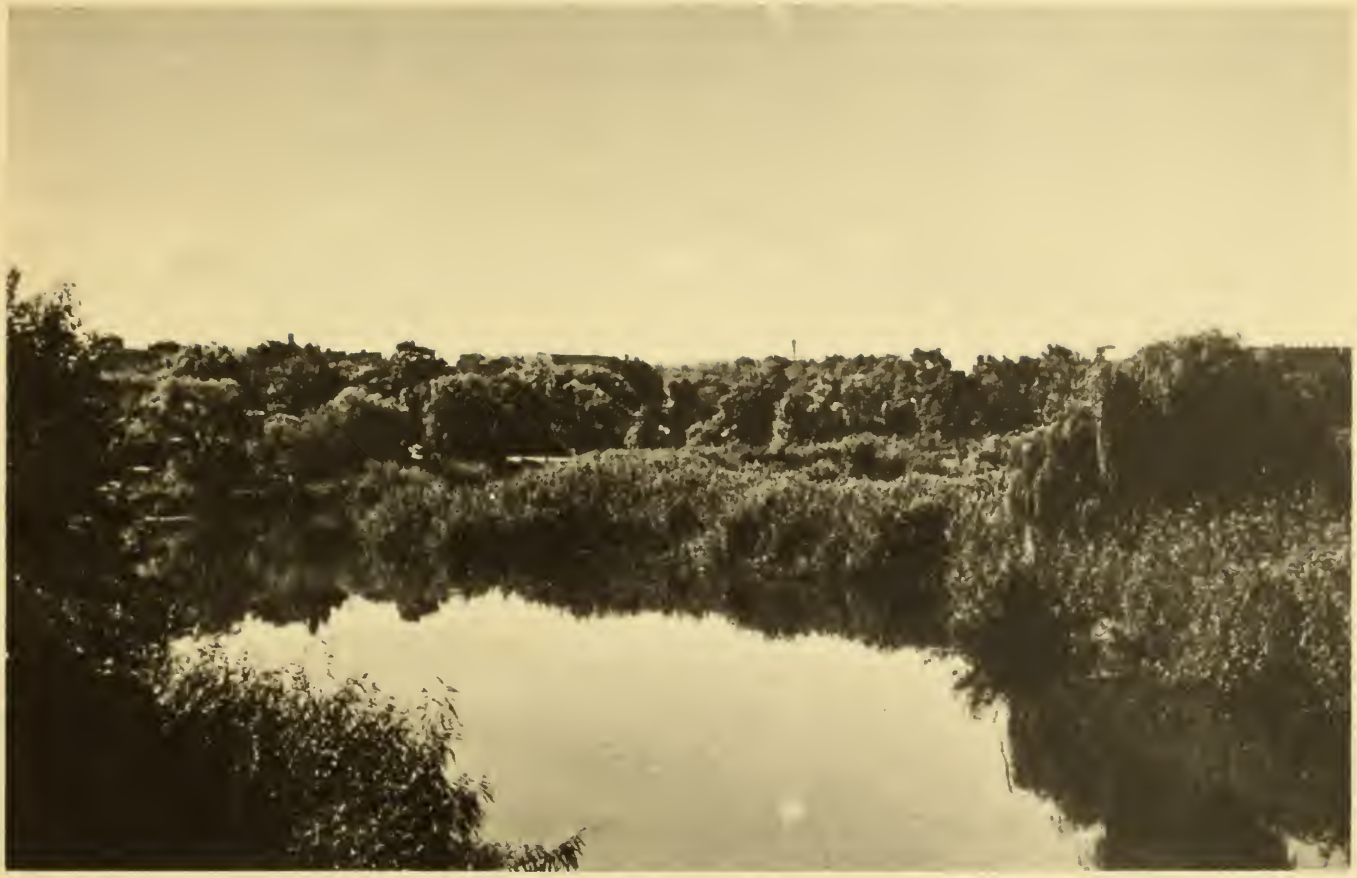

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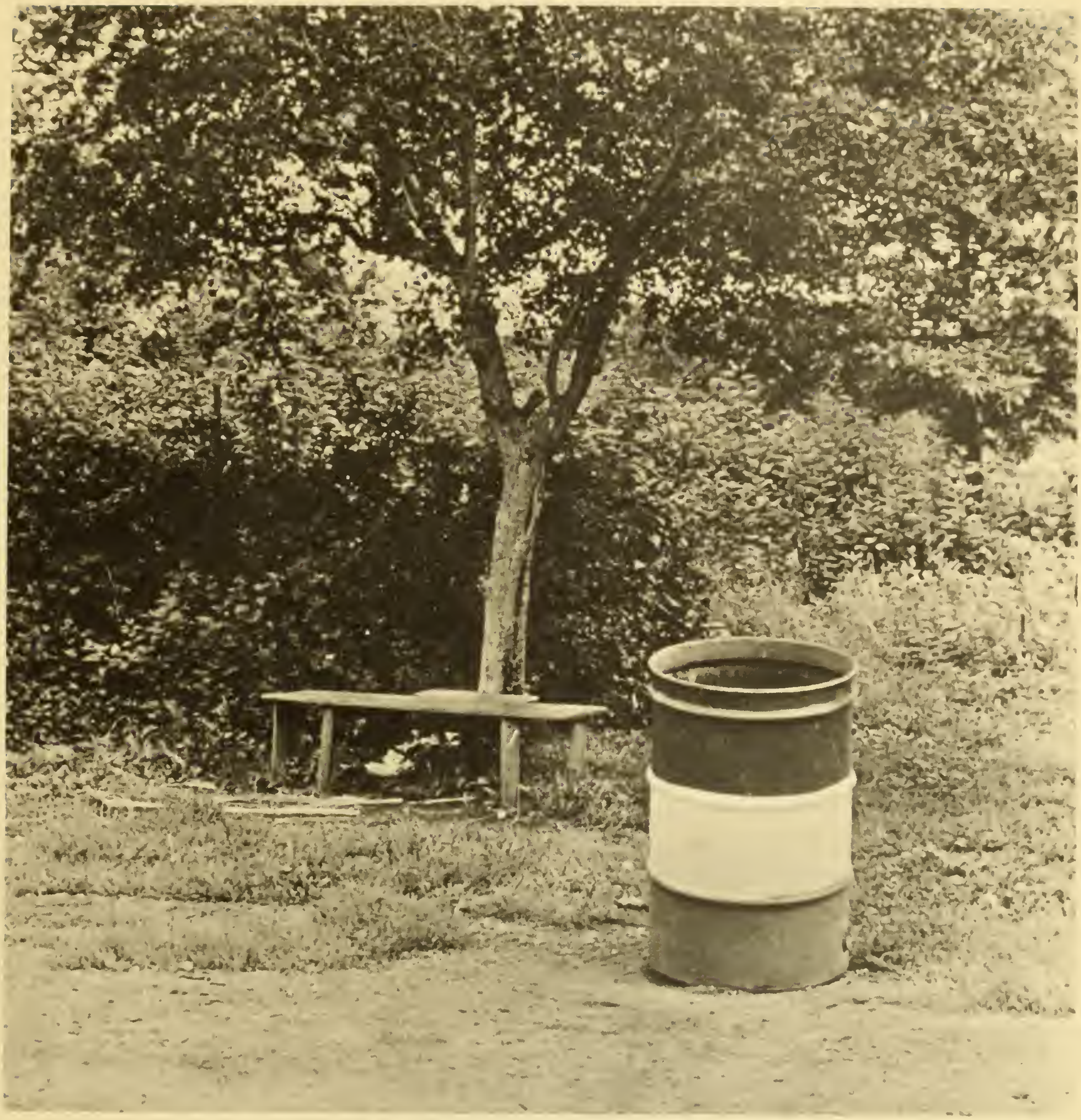

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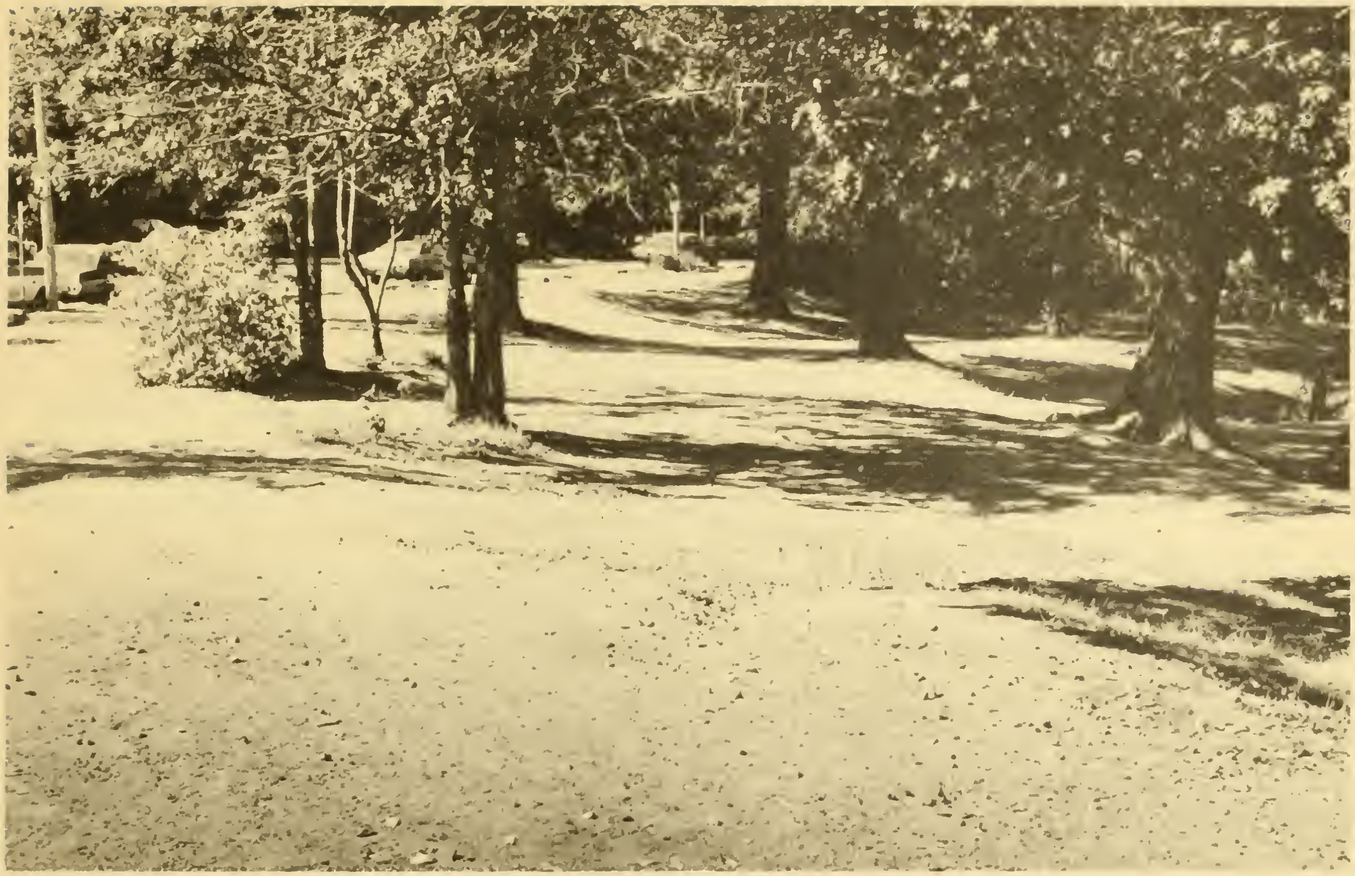

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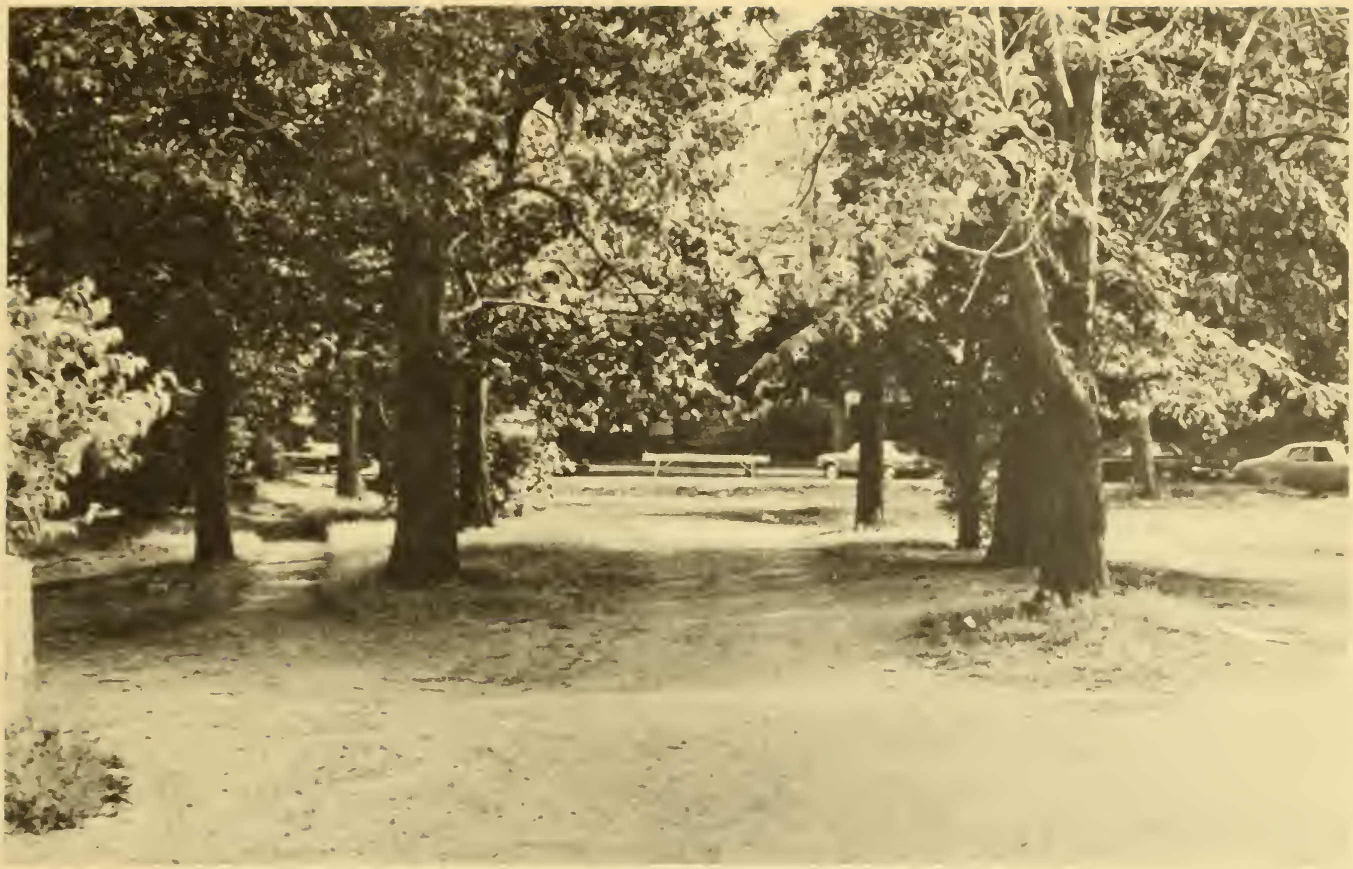

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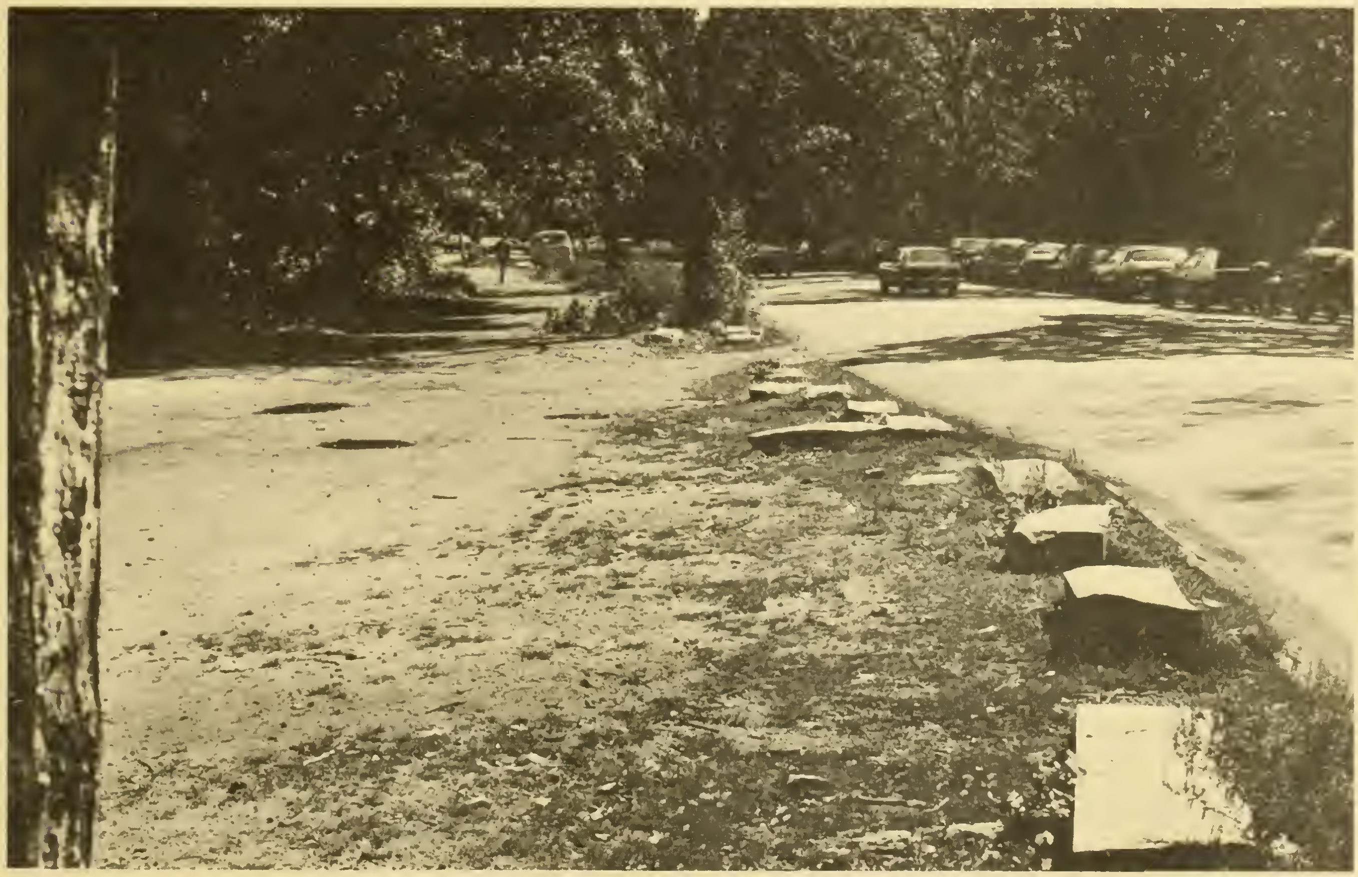

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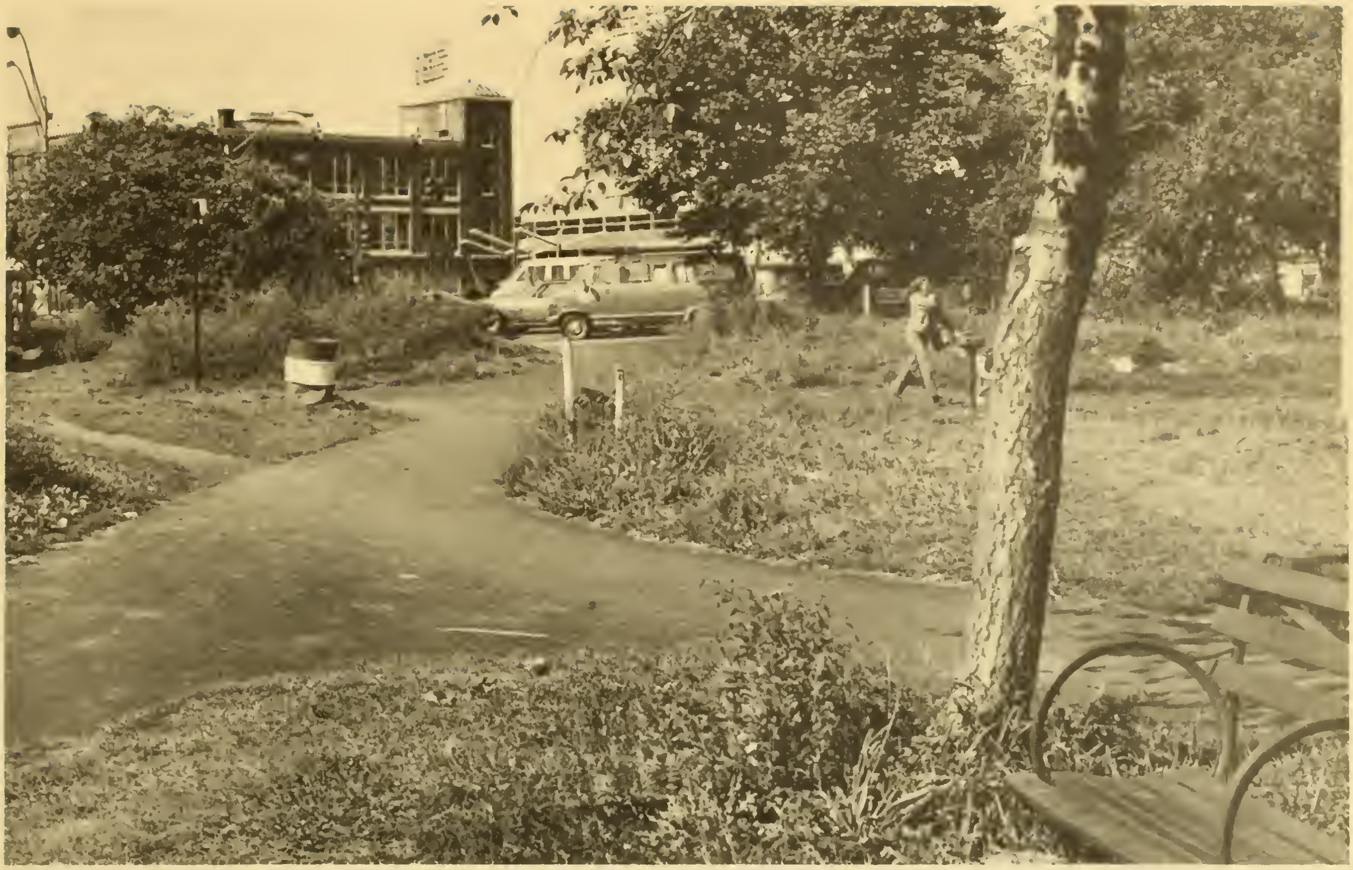

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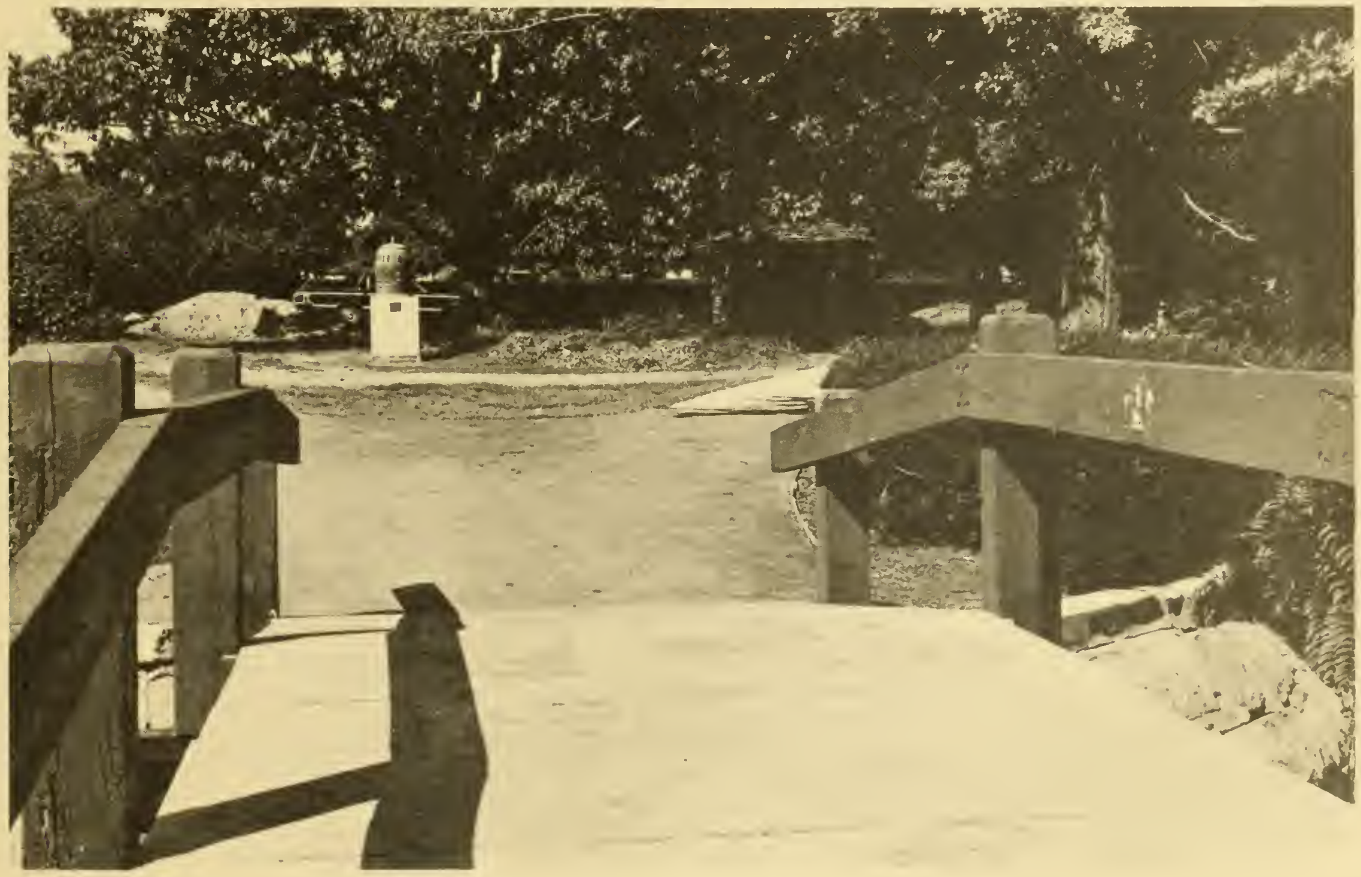

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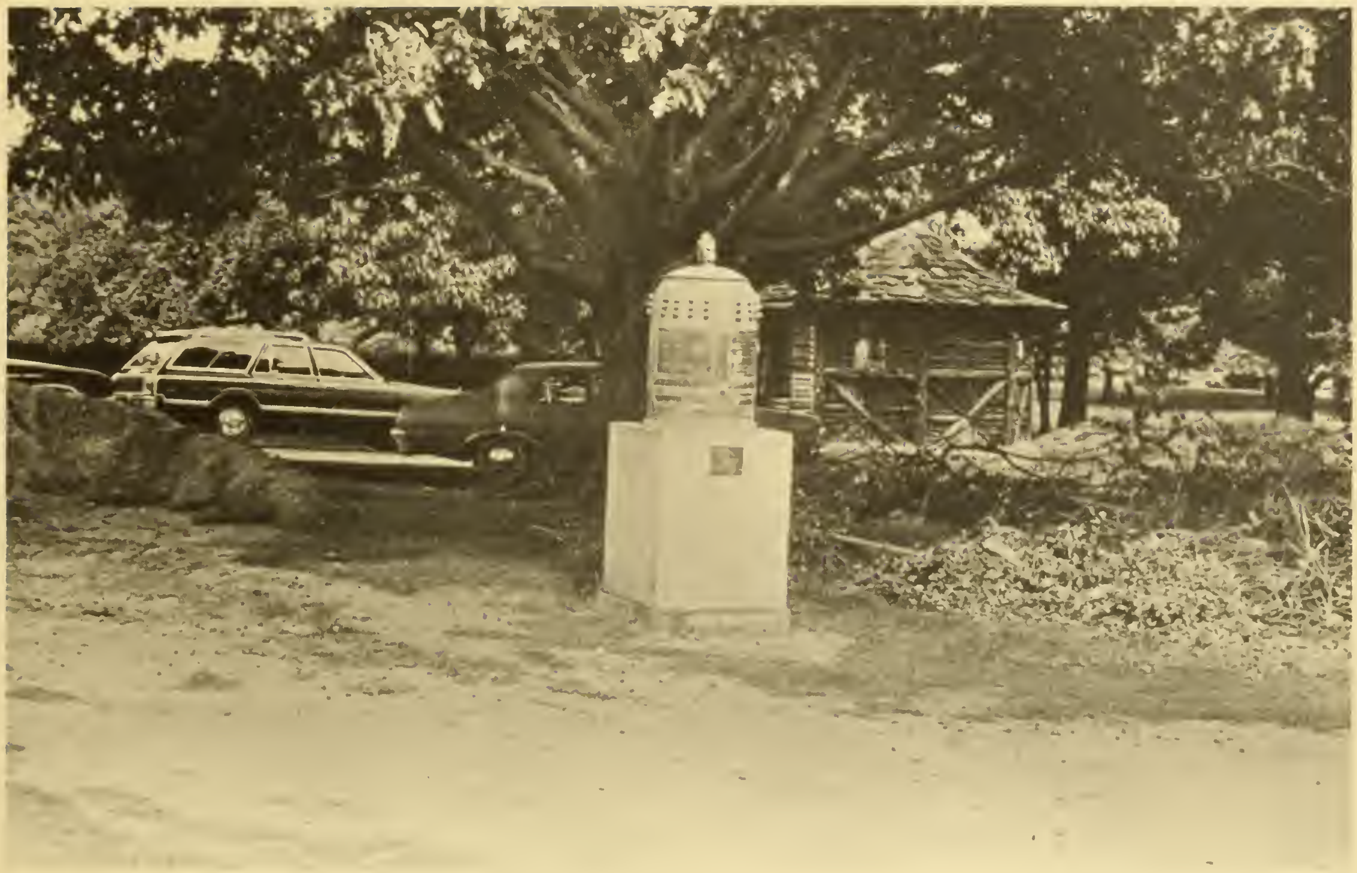

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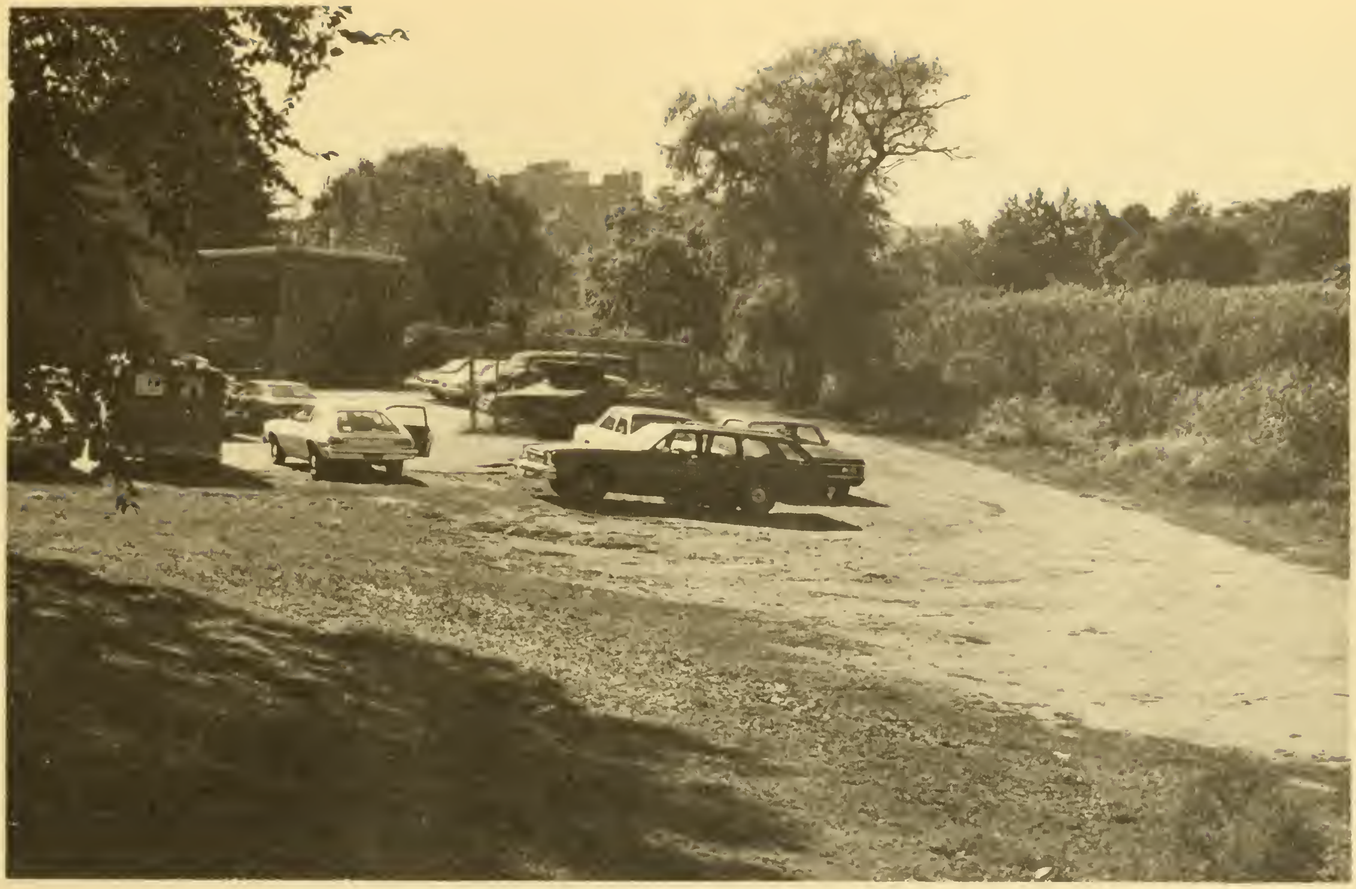

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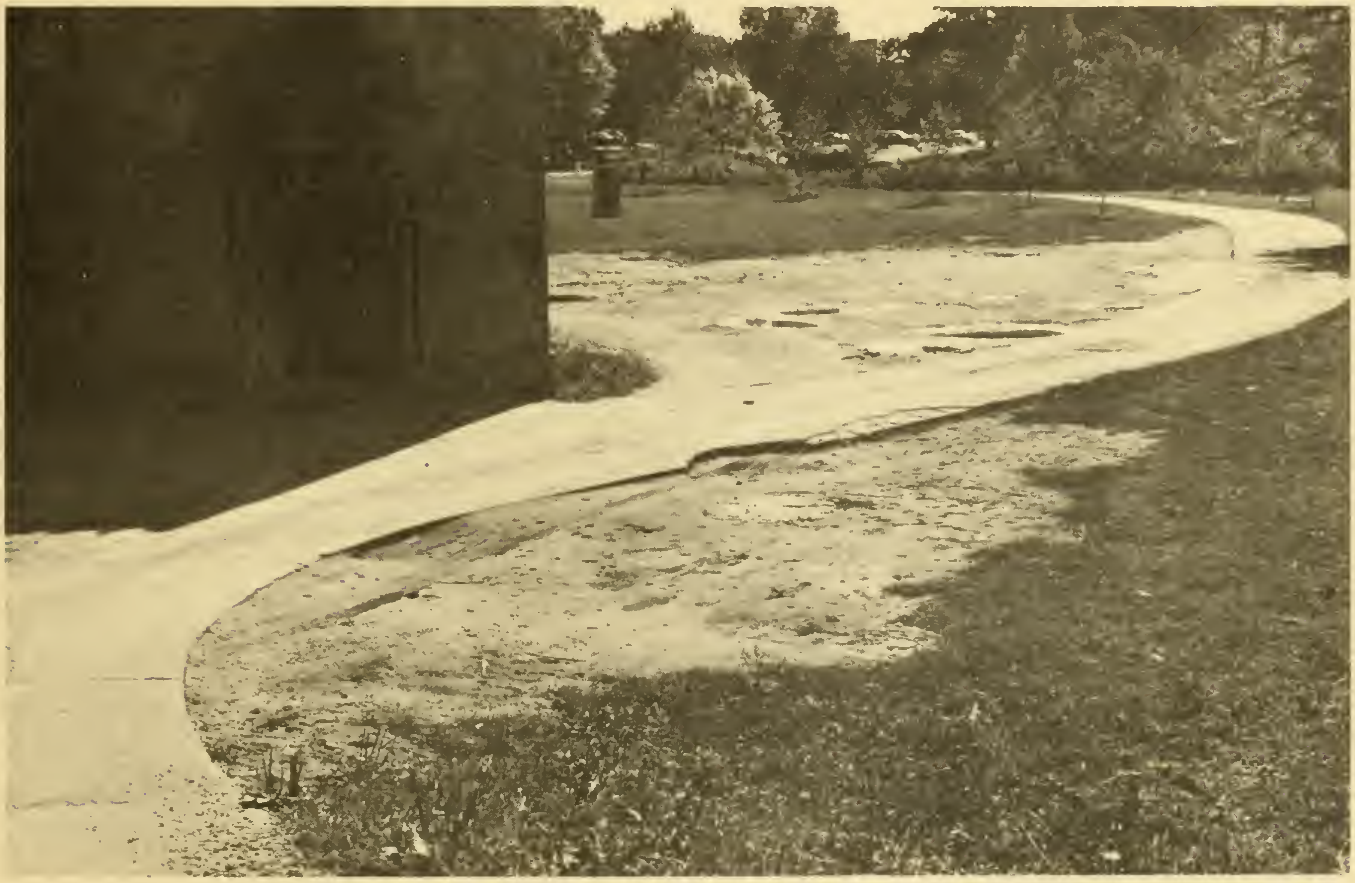

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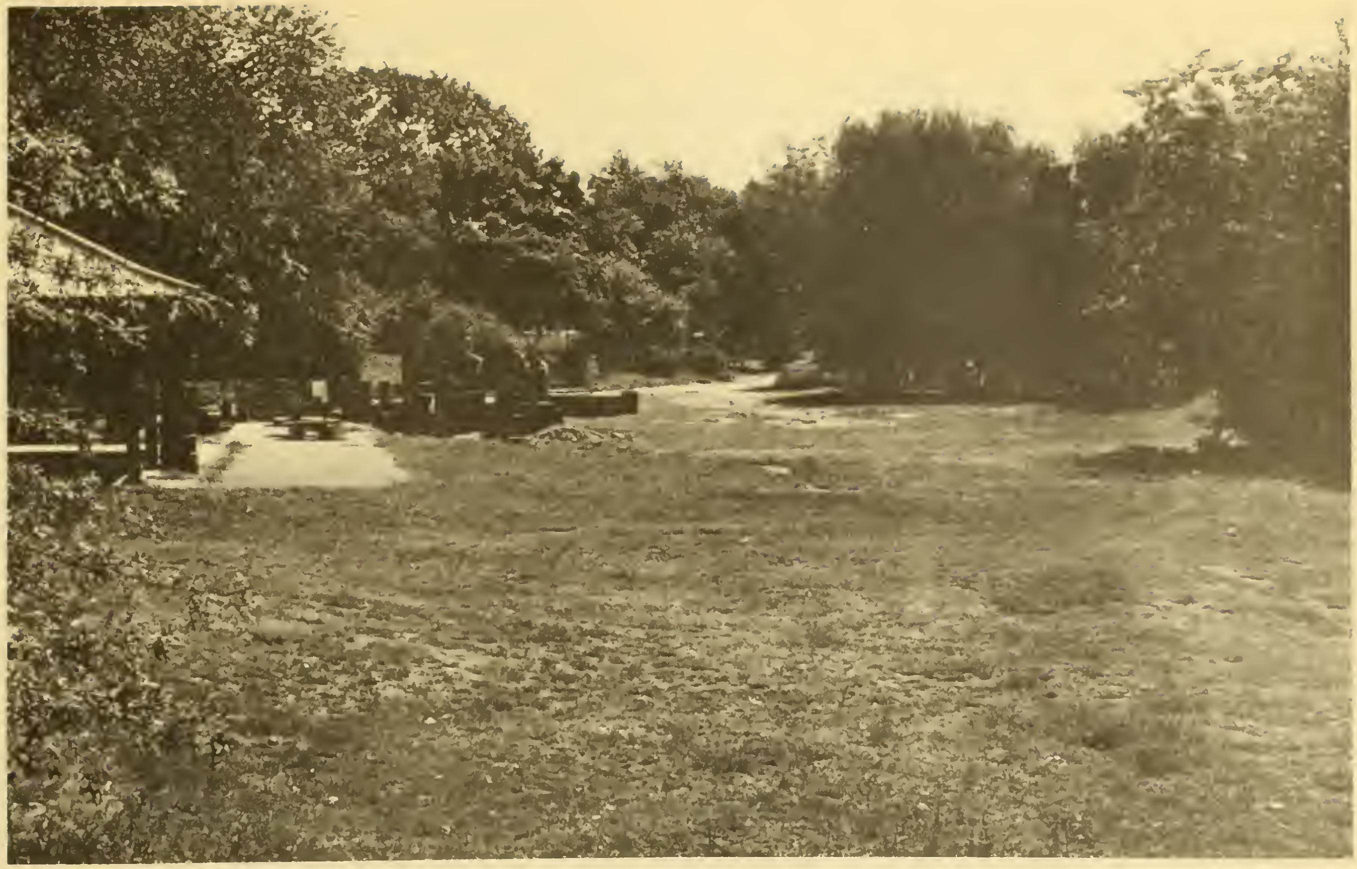

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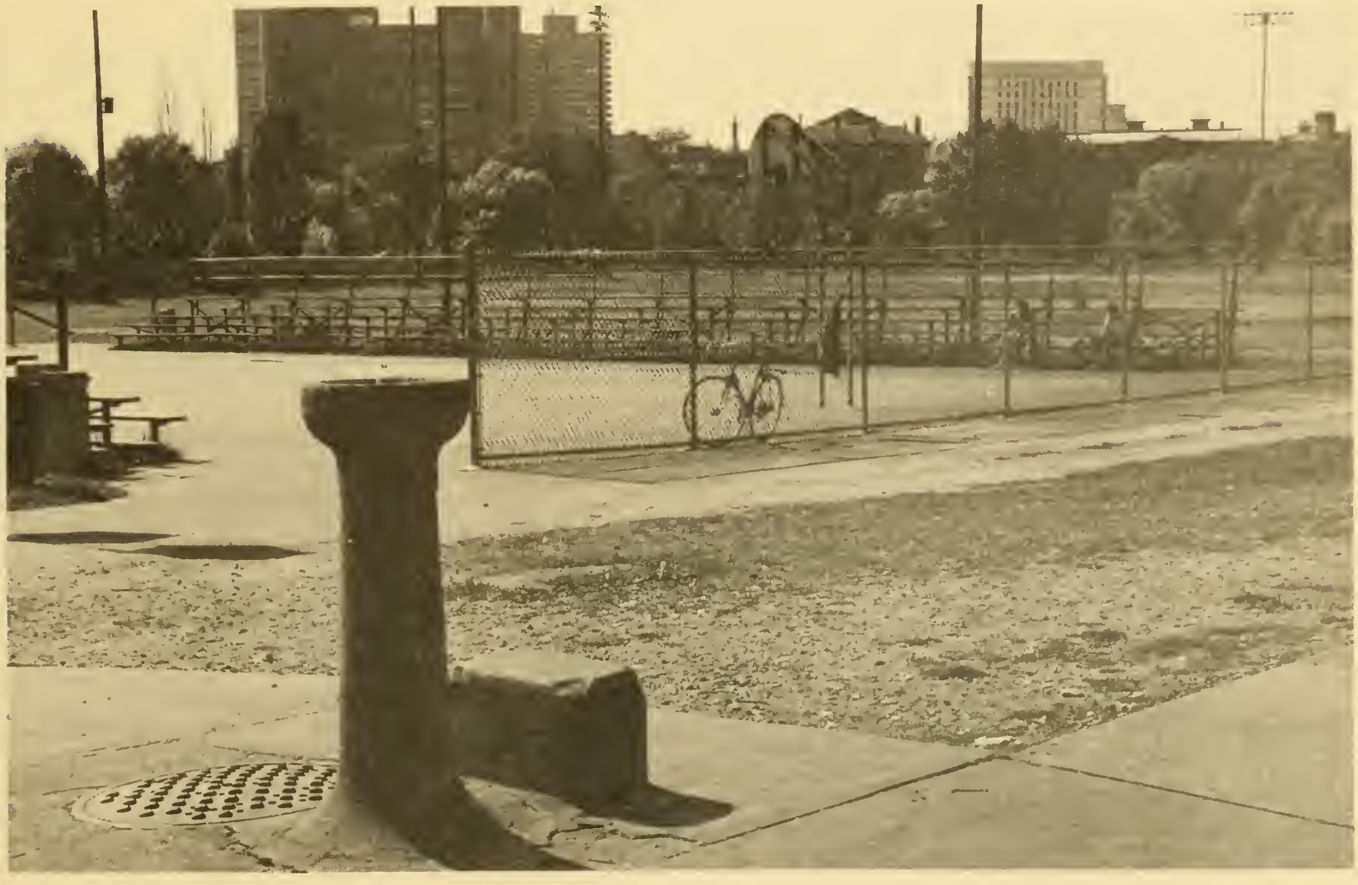

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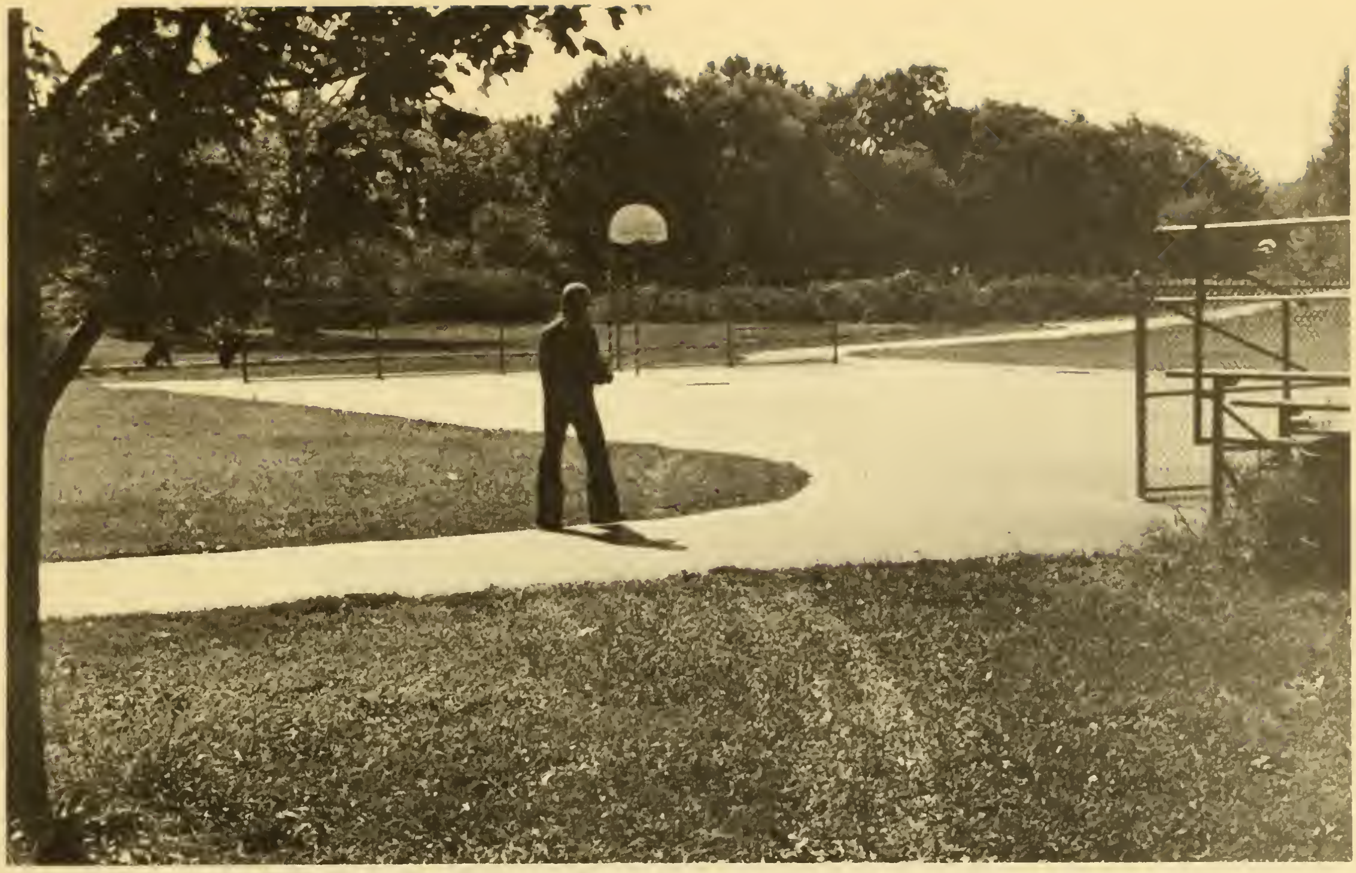

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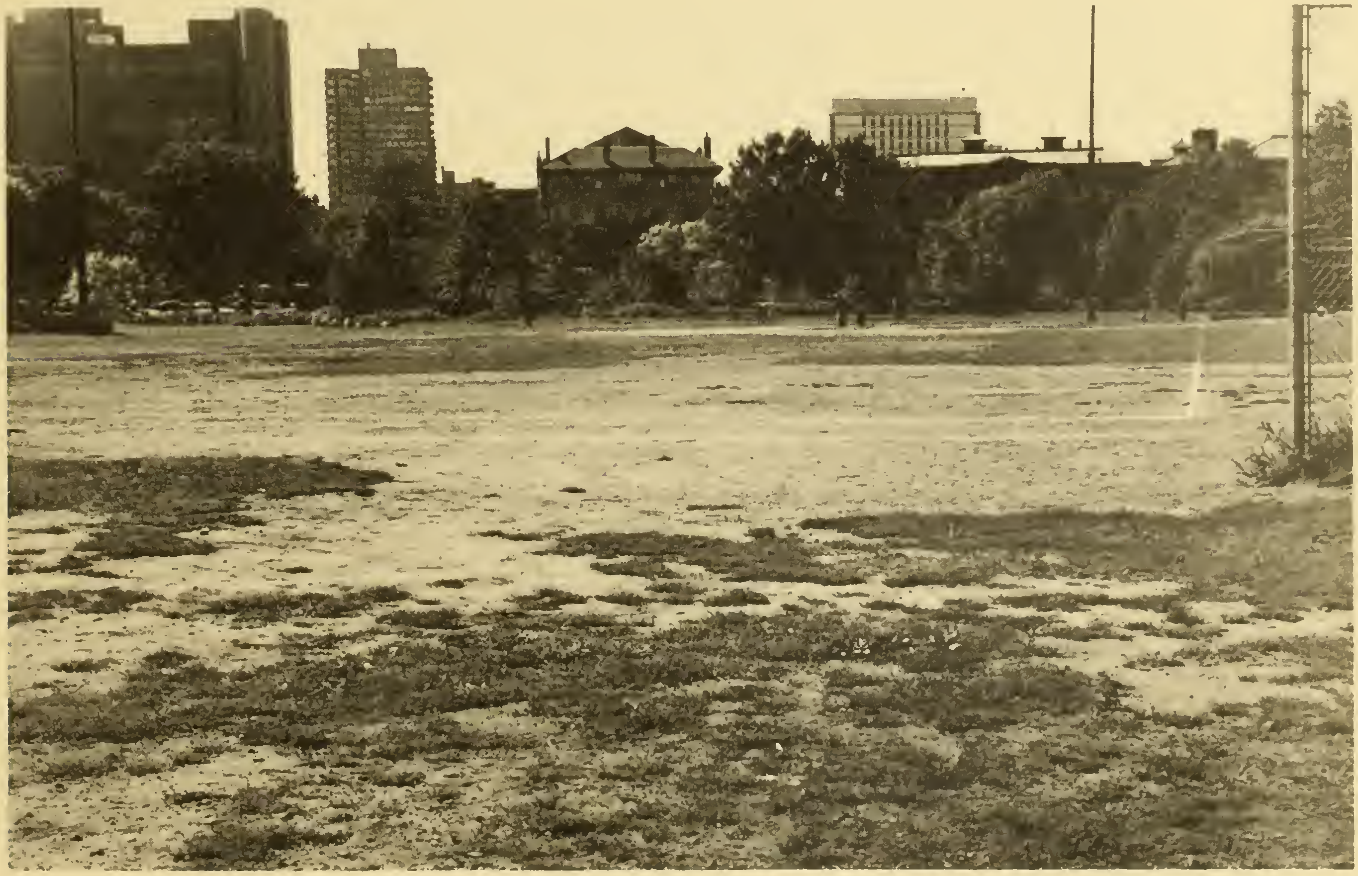

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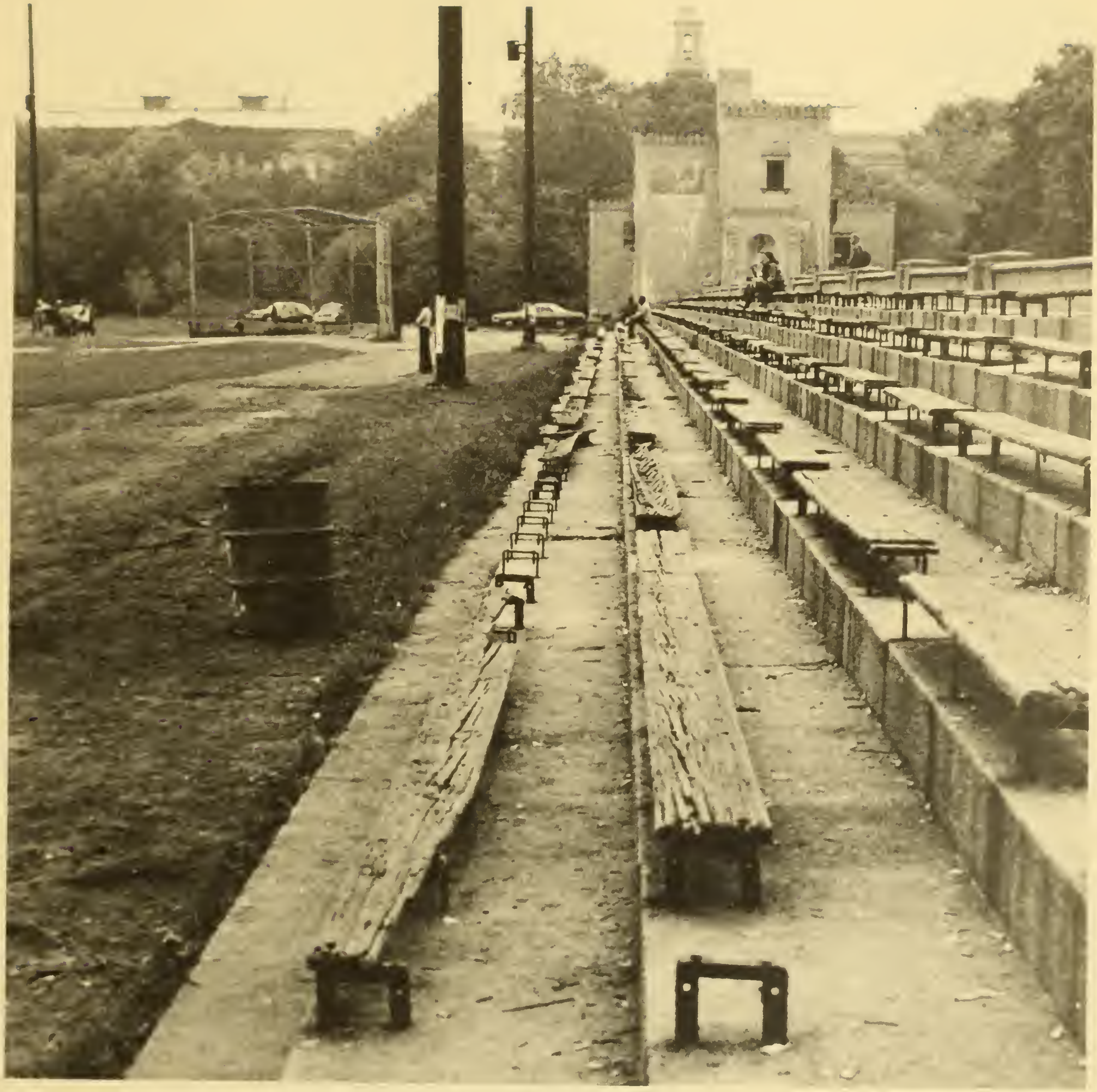

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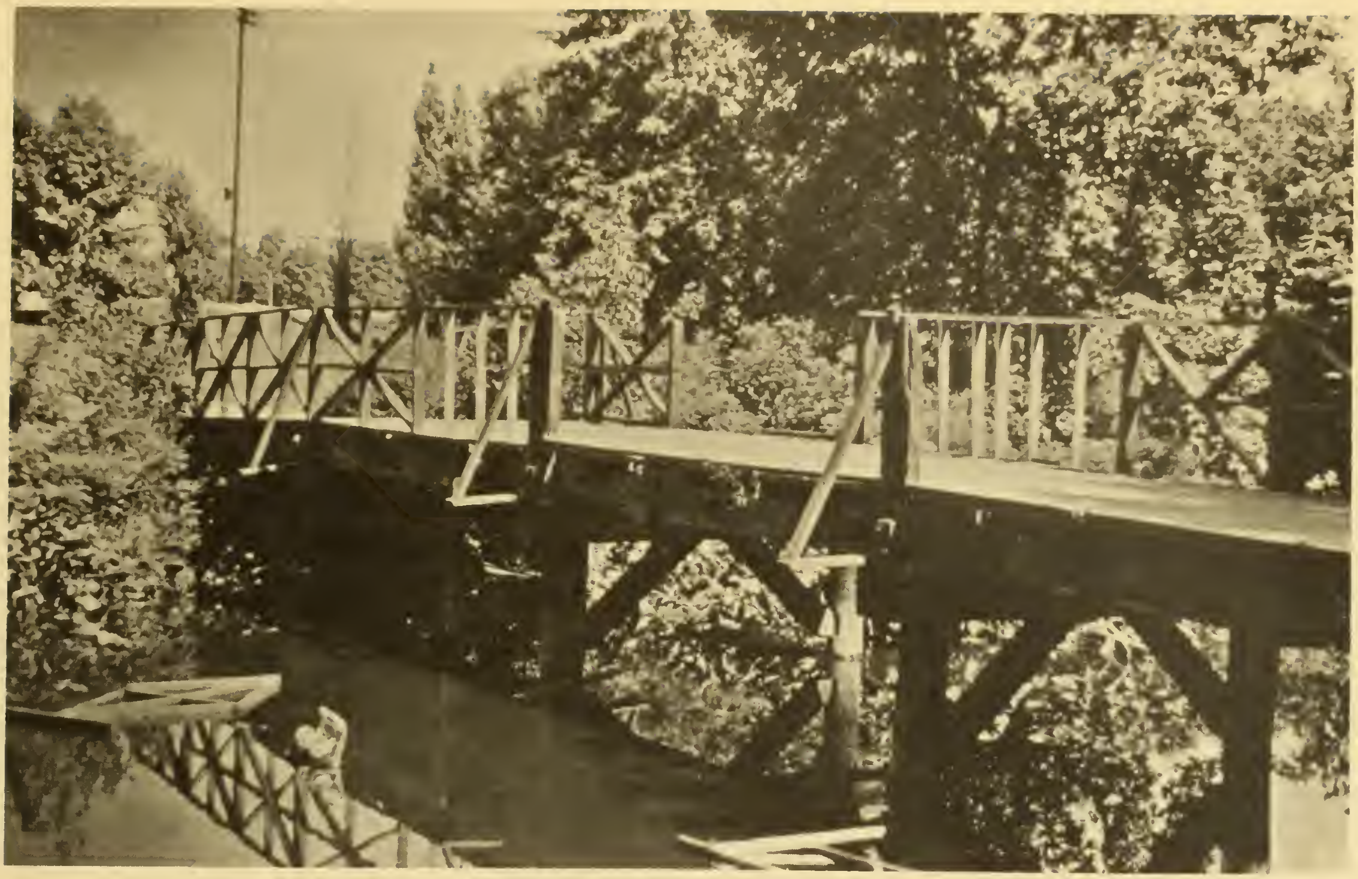

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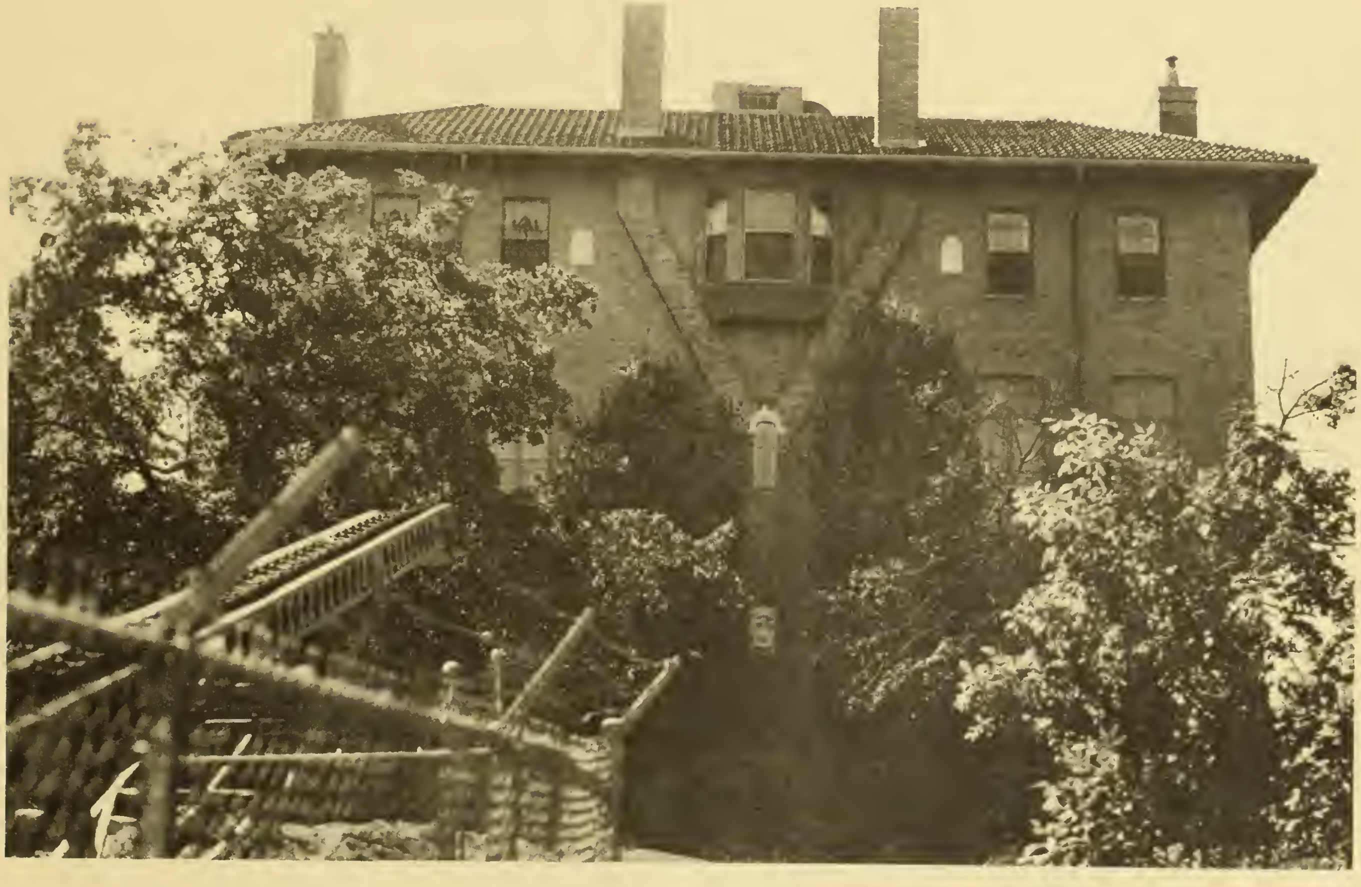

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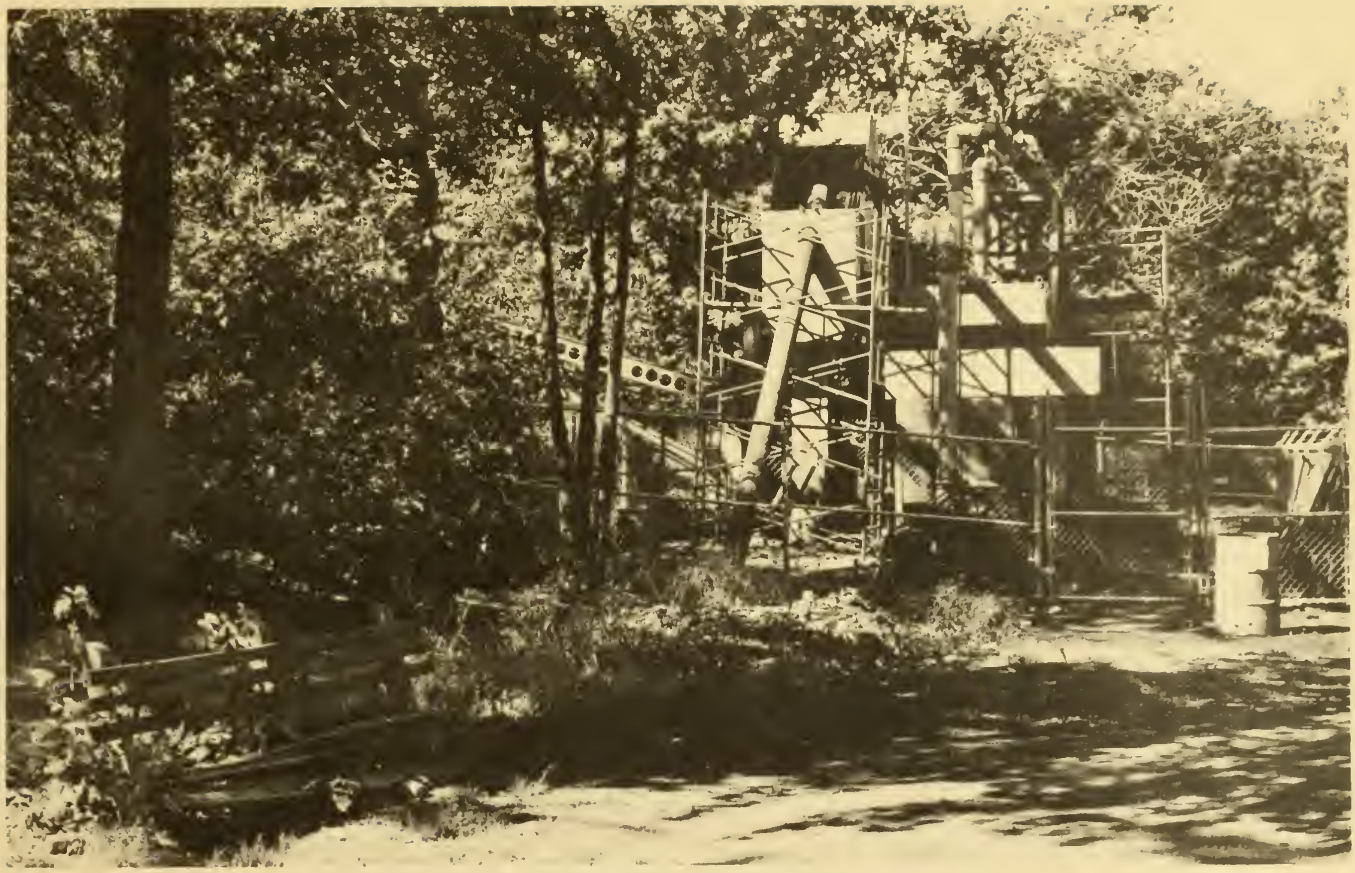

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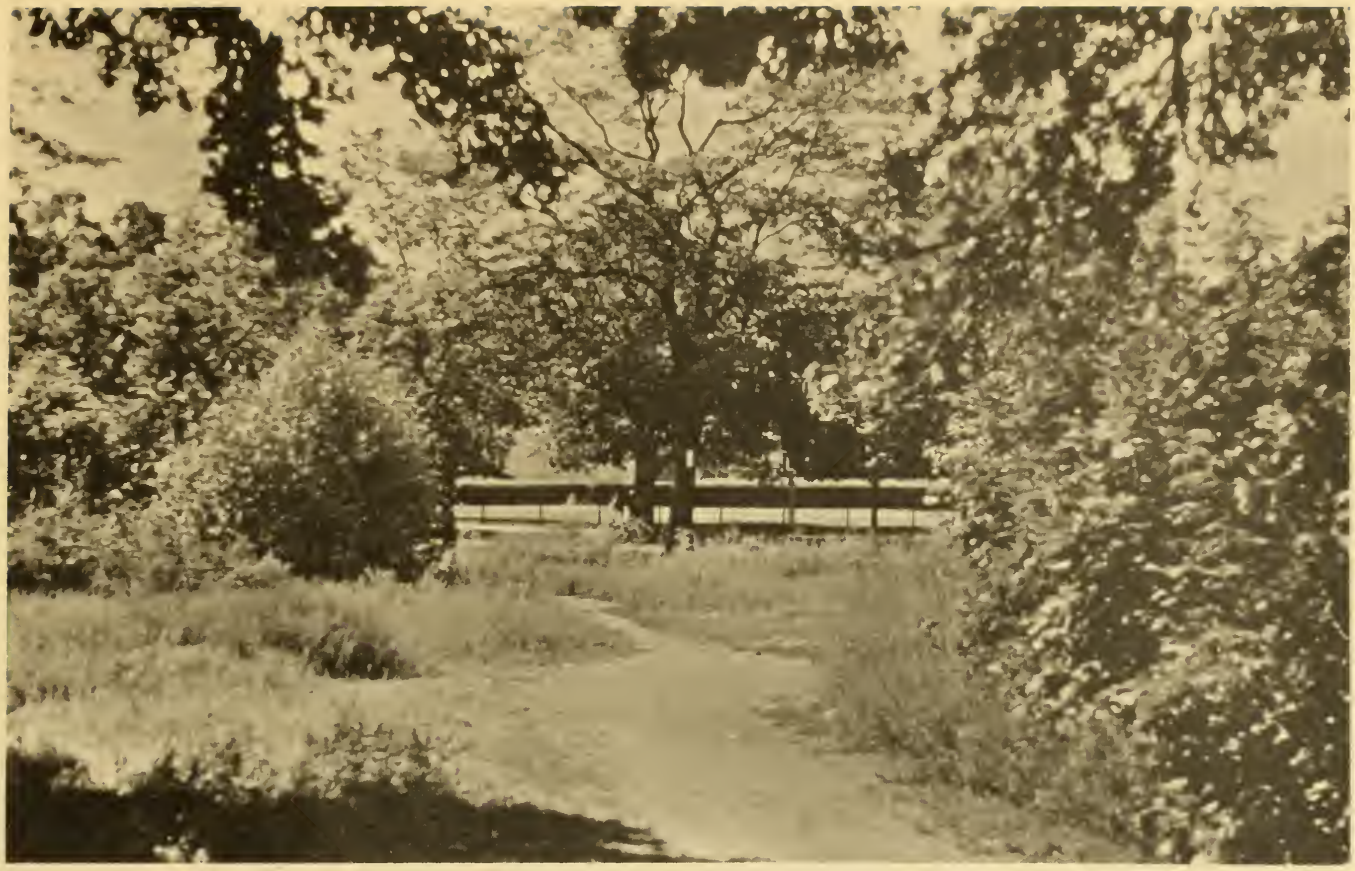

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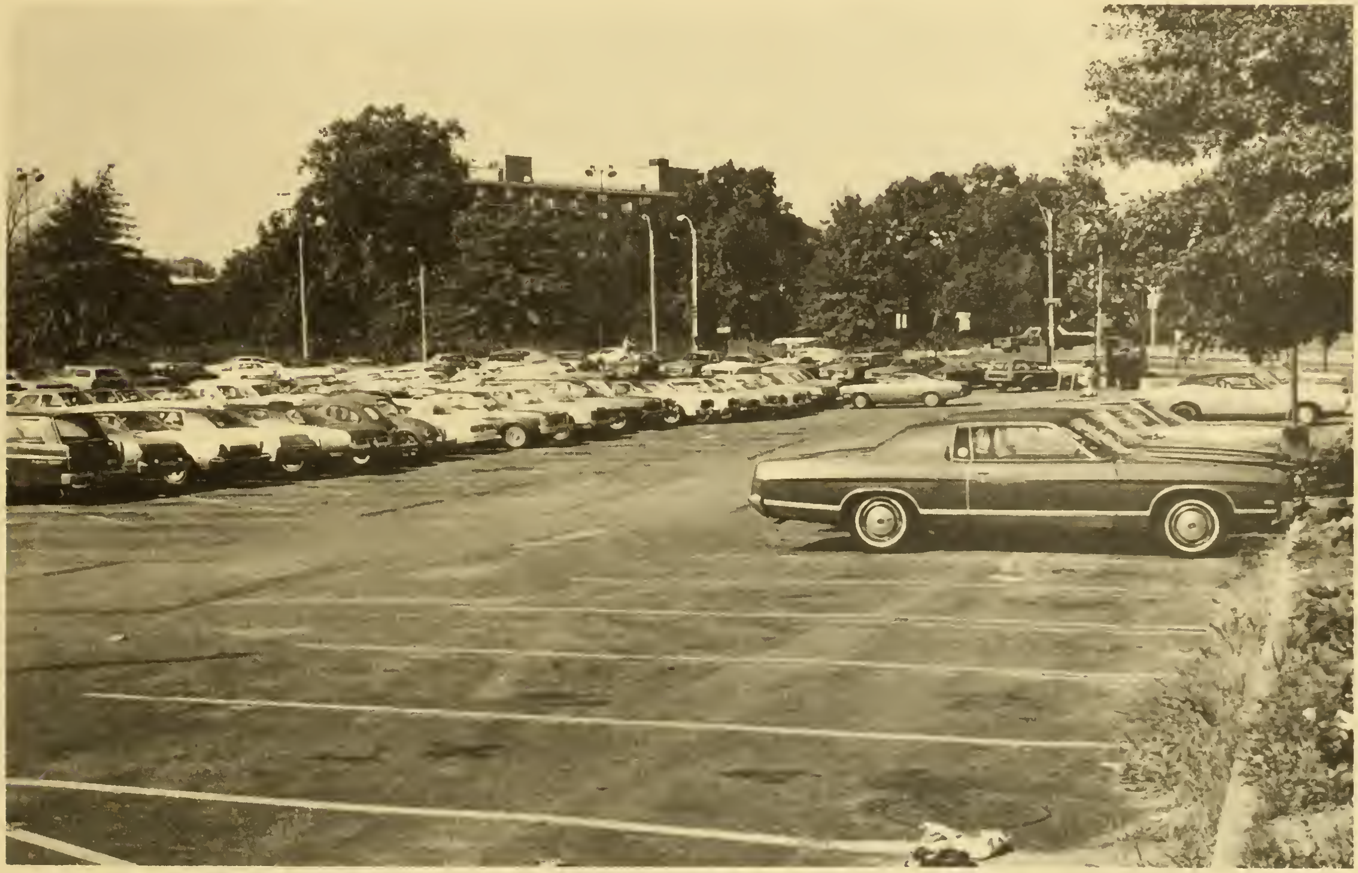


36. Sears and Roebuck parking lot. The parking lot is a major intrusion in the chain of parkland bordering the Muddy River. Water flow is accommodated by conduits underneath the parking surface.

HISTORY

HISTORY

The Back Bay Fens is a natural basin[1] whose topography has long since been changed by park development and engineering projects. In 1821, the Boston and Roxbury Mill Corporation constructed a salt-water mill pond by damming the natural depression at a location which is now Beacon Street. The pond derived salt-water from the Charles River which supplied its water in tidal flooding, but Stony Brook and Muddy River, two fresh water streams, flowed directly into the newly developed basin pond. These rivers passed through Roxbury and Dorchester, which during the 19th century were increasingly under development. Like all urban flowing water of the time, they served the communities as sewage collectors, and they dumped increasing amounts of pollution into the mill pond.

The tide mills abandoned use of the pond in 1866, and in 1870 the sluice gates leading to the Charles River were torn out. This meant that the river's tidal action ebbed and flowed along the banks of the swampy basin, revealing sewage at low tide. Almost immediately, the abutting landowners began to demand that the city take some action to reduce the noxious odors which emanated from the marsh. In addition, the periodic flooding of the area, when heavy run-off combined with high tides, was restricting the development of some land along the Muddy River and Stony Brook.

By 1875, public pressure had forced the city to initiate administrative action to consider the problems. A three-man Park Commission was created with a mandate to develop a general park system for the city, with particular attention to the Back Bay drainage situation. This was the culmination of five years of effort which included approval by the Massachusetts Legislature and acceptance by a general referendum in Boston itself. Although actual design and construction of the Fens park was still some years away, the city sought to neutralize the problem by the construction of a loose rock-fill dam in the old sluiceways to keep a minimum level of water in the basin. The rock dam accomplished this task, but the product was a small body of stagnant water which was unable to handle the sewage carried to it by the fresh water streams.

In 1877 when the Boston City Council at last supplied the funds needed by the Park Commission to begin design activity, the Commission chose to conduct a competition for laying out a park in the Muddy River basin. At this time the Boston Park Department was retaining a landscape architect for field inspections and park design. This consultant, Frederick Law Olmsted, was a noted journalist and park designer of New York City's Central Park (1857) and Prospect Park (1865).

At the conclusion of the competition, which Olmsted declined to enter, he was asked to render his professional judgment of the entries. The Boston city engineer told Olmsted that none of the designs provided the proper technical solution to the drainage problems in the basin, and that therefore, no matter how aesthetically appealing, none could be utilized for the project. Working with the city engineer, modifying his plans, Olmsted provided the Park Commissioners with a plan which solved the engineering and drainage problems, and provided an attractive park-like treatment for the basin. Although the Commission made an award in the competition, Olmsted, and not the prize-winner, was engaged as Landscape Architect for the entire project.

The area to be developed was 100 acres in size. Olmsted regarded it as a significant portion of the total park system, the "Emerald Necklace," which can be seen in the map drawn by Olmsted, Olmsted, and Eliot for the Boston Park Department in 1894. Working drawings for the Fens area were developed in 1879; they display a meandering stream flowing between marshy land areas. Writing in 1911, Olmsted's son, F.L. Olmsted, Jr. stated: "The landscape design of the Fens was to create a salt creek bordered by salt marshes enclosed by high banks intended to be covered with wild flowers, low, compact shrubs, vines and creepers, and scattering trees--enough with the street trees to fairly well screen the future adjoining houses, but not enough to unduly shade out the ground cover. There are to be found many examples of this type of landscape where the little fresh-water rivers of New England come to the sea level and mingle with keen delight by artists and lovers of natural scenery, but...probably never before...conceived of as a thing to be imitated in laying out a public park."[2]

Nevertheless, before the salt marsh recreation could be undertaken, it was necessary to deal with the engineering problems. Olmsted first moved to control the amount of water flowing into the basin from the Charles, by the introduction once more of tidal gates where the basin flowed into the River. Secondly, he established a huge sewer interceptor on the Boston side of the basin to provide for run-off from Stony Brook. Filling in around this interceptor system, he initiated the construction of the park which he envisioned.

Excavation was actually begun in 1881, and the dam and tidal gates were operating by 1882. In that same year the Stony Brook gatehouse and conduit were completed, so that most Stony Brook flow went directly into the Charles River.

In 1883 the Muddy River Conduit to the Charles was introduced, which lessened the pollutant flow into the basin from that stream as well. However, during extraordinarily high tides and run-off periods, the Fens continued to be utilized as a storage area. "The proposed Roxbury storm sewer was to empty into the Fens only at rare intervals, and then only for two hours or so during extreme high water. It was acknowledged that even diluted as it would be with rain water, it would

be somewhat foul and would become more so until...it should be made less so by a separate system of sewers from which storm water would be excluded.... The basin was to be kept salt water because salt marsh flooded twice daily with salt water and would not be a breeding place for mosquitoes, malaria or otherwise.... The salt water was to be taken in by the Muddy River conduit under Brookline Avenue and let out by way of Charlesgate, and was to be controlled in each case by tide gates."[3]

Despite the recurrent polluting flows, the tidegate system permitted the basin to be drained and flushed when necessary, and the Fens had begun to improve. In 1887, the senior Olmsted wrote in the Department of Parks annual report: "It was admitted by the Department that the purpose to artificially form a salt fen of the character proposed was to be regarded as in some degree experimental... Its success is now so far established that next year, when the circuit road of the lower division of the basin shall be opened to the public, a sufficient approach to what was expected to be attained in the landscape character...will have been already accomplished to show that the result is not going to be unpleasing...it will now be in better taste to call the bottom of the basin by a name significant of its landscape character.... It is therefore suggested that instead of being called the Back Bay Basin, or the Back Bay Park, the place should be called The Back Bay Fens, or The Fens; that the sylvan bank of the basin should be called The Fenside, and that so much of the Parkway as is carried on the bank should be called The Fenway."[4]

Olmsted's son tells us that the "pleasure drives" around the Fens were designed by one Thomas Doane, an engineer employed by the Park Commission before Olmsted was called in, and designed mainly "to suit the requirements and whims of the owners of the land then about to be purchased."[5] "As originally designed, the park and its water way were crossed by bridges carrying Beacon Street, Commonwealth Avenue, the Boston and Albany Railroad, and Agassiz Road. There were six entrances: the arm called the Charlesgate linked to the river; the Boylston and Westland entrances from the east; the Huntington entrance from the southeast; the Parker Hill or Tremont entrance from the southwest; and the Longwood entrance at the western end..."[6] The roadways carrying Boylston Street and Agassiz Road were built across bridges designed in 1882 and 1888 by the distinguished architect, H.H. Richardson, who often collaborated with Olmsted.

The Fens, as designed by Olmsted, was primarily a park for passive recreation, although he provided paths for horseback riding, and anticipated that there would be quiet canoeing along the curving stretch of water and the upstream tributaries. The low marshy areas were planted with a variety of brackish water plants like sedges, rushes, salt grasses, beach plum, barberries, candle berries, cydonias, tamarasks, goldenrod, and asters. Higher ground was planted with oaks and maples, and natural vegetation was encouraged. Although it was planned that waterfowl would be artificially introduced to the park, the birds came to the area without artificial stimulus, almost from the start of the project.

The period of enjoyment of the park in the condition envisioned by Olmsted was brief. Although many circumstances have altered the Fens during the past 70 years, the most significant change was probably the construction of the Charles River Dam in 1910. By this action, the tidal flooding of the Fens was abruptly stopped. During pre-construction studies of the Dam, it was concluded that the change of the Fens from salt-water marsh to fresh water basin would aggravate the continuing recurrent pollution, and that therefore, all sewage must be diverted from the Fens. Indeed, the new level of the Charles brought with it a constant water level in the Fens about six inches higher than Olmsted had designed. This meant that the marshes were almost constantly under water, and no longer provided attractive views of salt marshes. The meandering stream pattern was lost in the newly flooded basin. In addition, the vegetation which had formerly grown only on the higher levels of the banks away from the salt water edge now moved down the banks toward the fresh water.

Since the water was almost stagnant, the abutting landowners once more began to take notice of the foul smells emanating from the swampy area. Periodic attempts to overcome the problem were undertaken, including the dumping of filling material from subway excavations, and subsequent filling with ashes and rubbish by the Boston Sanitary Division. No funds were expended on bringing the fill to a finished contour, however, and the city concurrently ceased expending funds on the more marginal parts of the Fens which had been used for walkways and bridle paths.

F.L. Olmsted, Jr. commented in 1911: "...the lowered salt marshes, formerly kept beautiful and sanitary by the daily tidal flooding with salt water, have been turned into foul-looking mud and fresh water swamp and a breeding place for mosquitoes and malaria. This unsanitary condition is being gradually obviated by filling over the marshes with city ashes, street sweepings and earth from excavations. .. to cover such of these areas as are large enough with cinders and binder for ball grounds...this is a savage waste of landscape park which was created for landscape beauty at an enormous cost..."[7] Nevertheless, an athletic field was constructed in 1912 which is still in place today, in a modified form.

In 1913, the Boston Museum of Fine Arts was constructed. In conjunction with that project, Arthur A. Shurtleff, landscape architect and at one time associated with Olmsted's sons, produced several proposed designs for use of the Fens as a location for active recreation, including baseball, tennis, and football. Most of these designs, and a separate series of more detailed plans, reflected proposals for the area directly opposite the newly built museum. Shurtleff continued to make proposals for the Museum "lagoon" site and the surrounding areas for the next 20 years. In 1921, Shurtleff and the Olmsted Brothers also produced a master plan of the Fens for the Boston Park Department.

In 1925, Shurtleff added a bleachers complex and redesigned the athletic field, and in 1928 a Field House was added, designed by William Austin.

The City of Boston Fire Control Center, constructed in 1927 at the Westland Entrance to the Fens, blocks the vista from that direction.

In 1930, a proposal for grading the lagoon and lawn area was prepared by Shurtleff and carried out by the Park Department. Also in the same year the formal Rose Garden was built following Shurtleff's design; in 1933 the Rose Garden was expanded to its present dimensions. (By this time Shurtleff had changed his name to Arthur A. Shurcliff.)

In this way, the passive natural area of Olmsted was modified to be an area which could encompass a number of varied activities, but which, at the same time, lost the simplicity of the original salt-water marsh. As landscape historian Norman Newton has written: "In the western part of the Fens, from Agassiz Road to the end, at least half of the original water area has been filled in. The 'blooming inlets' that Olmsted planned are gone. What were once quiet marsh-meadows are now occupied by an athletic field of indifferent quality, a geometric rose garden, and a war memorial. East of Agassiz Road the former marsh-meadow has been given over for many years to 'victory gardens,' ...planted and maintained by individual citizens on application and permit."[8] Both the Victory Gardens and the War Memorial stemmed from World War II, and were introduced in the 1940's. In 1952 the Manpukuji (Japan) Temple Bell was moved to the Fens from Boston Common, and in 1970 two basketball courts were added by the Boston Parks and Recreation Department.

The Back Bay Fens today is a heavily used urban green space, exhibiting the effects of maintenance problems as well as many uncoordinated improvement projects. Still existing to some degree are the rural park qualities envisioned by Olmsted. These qualities can be reestablished in a blend with contemporary park improvements, but only through a renewed commitment toward restoration and maintenance.

FOOTNOTES

[1] Historical material in the following pages largely excerpted from reports of the Metropolitan Area Planning Council, 44 School Street, Boston, Massachusetts, in particular Historical Overview, Kenichi Nakano, January, 1973, and Change of the Back Bay Fens from Tidal Marsh, Mark Brickley, and Elissa Landre, January, 1973, as well as other cited sources.

[2] Thirty-Sixth Annual Report, Board of Commissioners, Department of Parks, Boston, Massachusetts, 1911. Frederick Law Olmsted, Jr., author, p. 51.

[3] Ibid., p. 53

[4] Twelfth Annual Report. Board of Commissioners, Department of Parks, Boston, Massachusetts, 1887. Frederick Law Olmsted, Sr., author, p. 66.

[5] See Footnote #2, p. 55

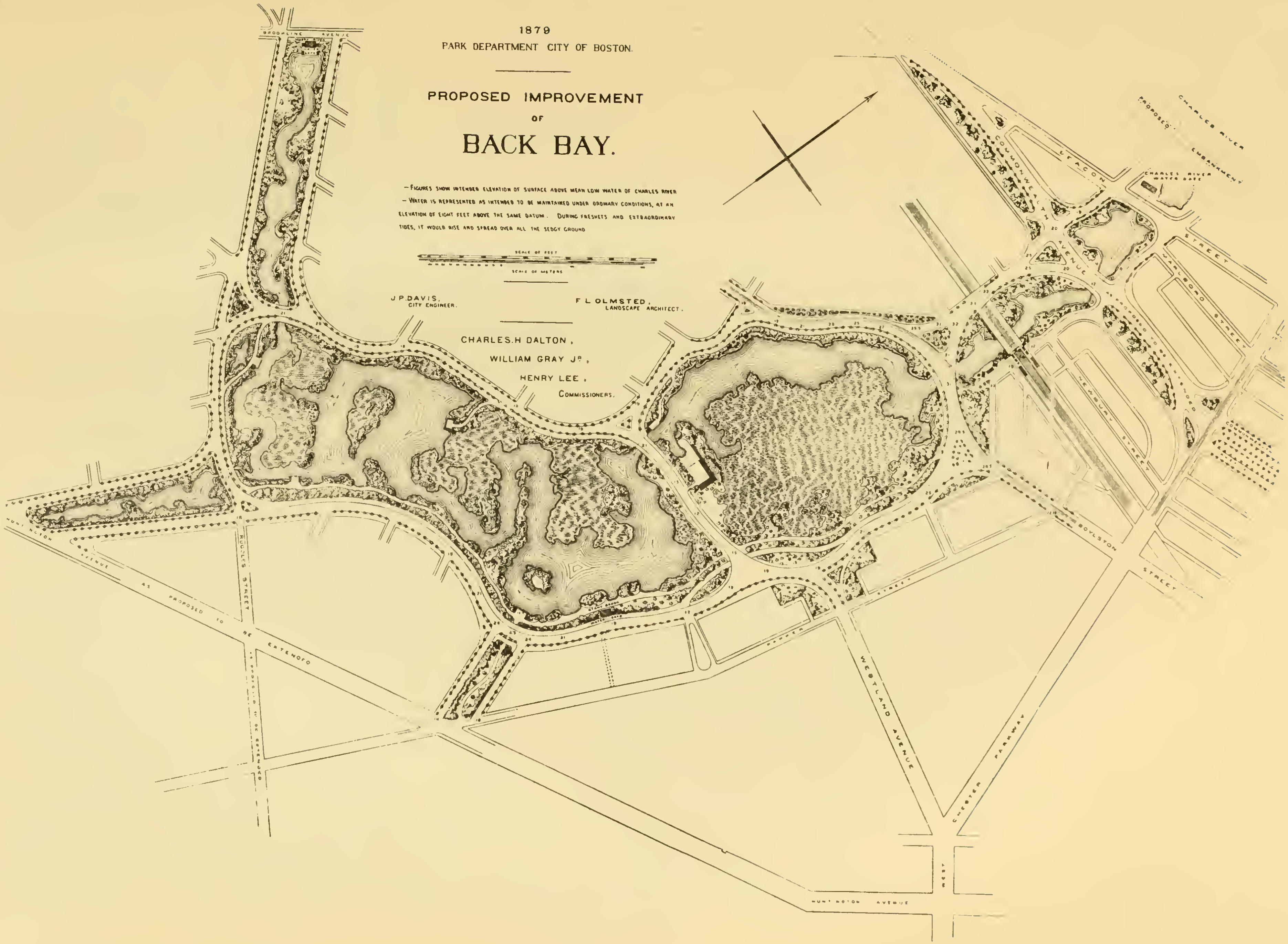
[6] Design on the Land, The Development of Landscape Architecture, Norman Newton, Harvard University Press, Cambridge, Massachusetts, 1971, p. 291

[7] See Footnote #2, p. 58

[8] See Footnote #6, p. 291

EARLY MASTER PLANS

1879 Frederick Law Olmsted. The first master plan of the Back Bay Fens prepared for the City of Boston Park Department. The plan allowed tidal flushing of the Fens from the Charles River and provided a surrounding series of paths and parkways for walking, horseback riding and horse drawn carriages. The low wetland was to be planted with saltwater vegetation, while the higher ground and slopes with trees and shrubs (Oaks, Maples) usually growing in non-saline soils.



1879
PARK DEPARTMENT CITY OF BOSTON.

PROPOSED IMPROVEMENT
OF
BACK BAY.

— Figures show intended elevation of surface above mean low water of Charles River

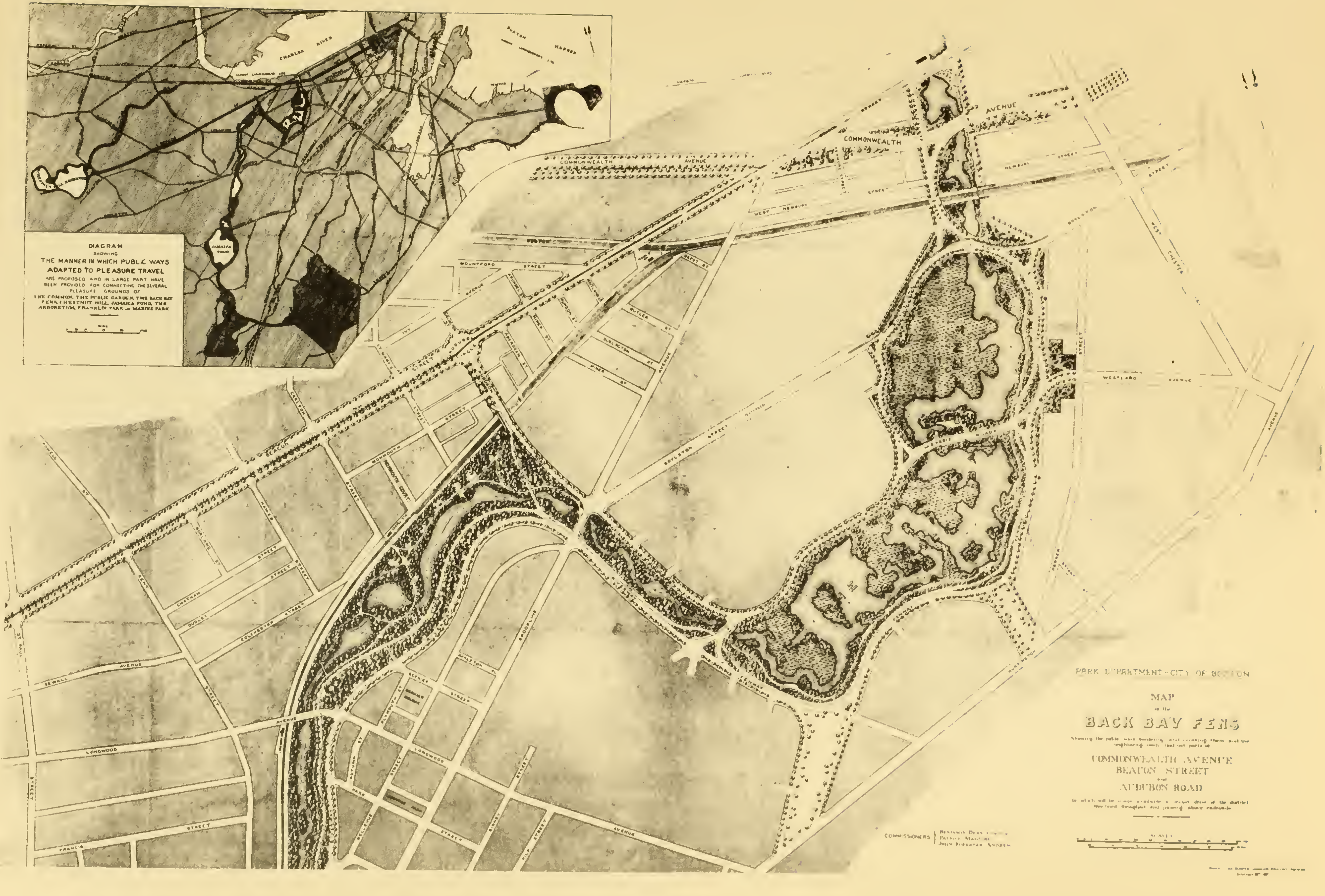
— Water is represented as intended to be maintained under ordinary conditions, at an elevation of eight feet above the same datum. During freshets and extraordinary tides, it would rise and spread over all the sedgy ground

J. P. DAVIS,
CITY ENGINEER.

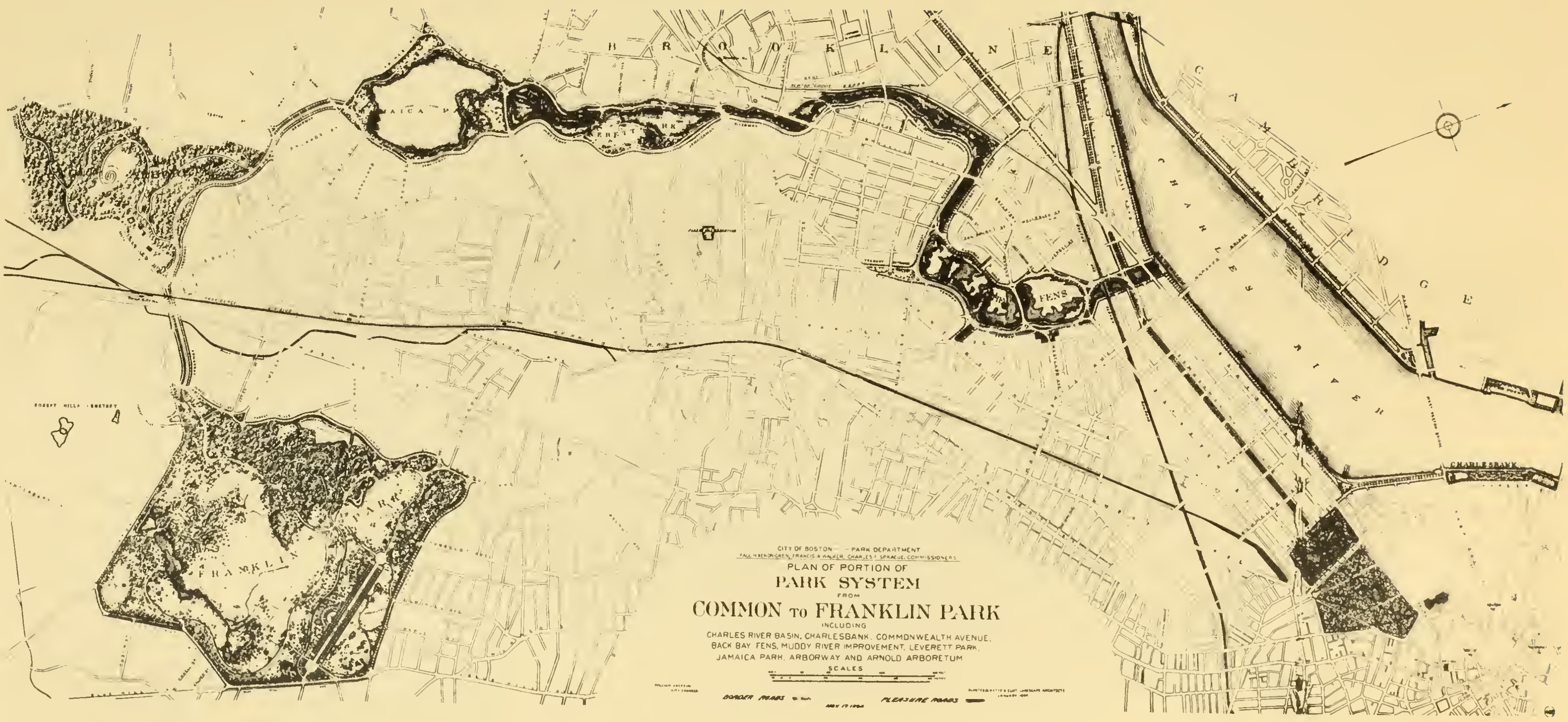
F. L. OLMSTED,
LANDSCAPE ARCHITECT.

CHARLES H. DALTON,
WILLIAM GRAY Jr.,
HENRY LEE,
COMMISSIONERS.

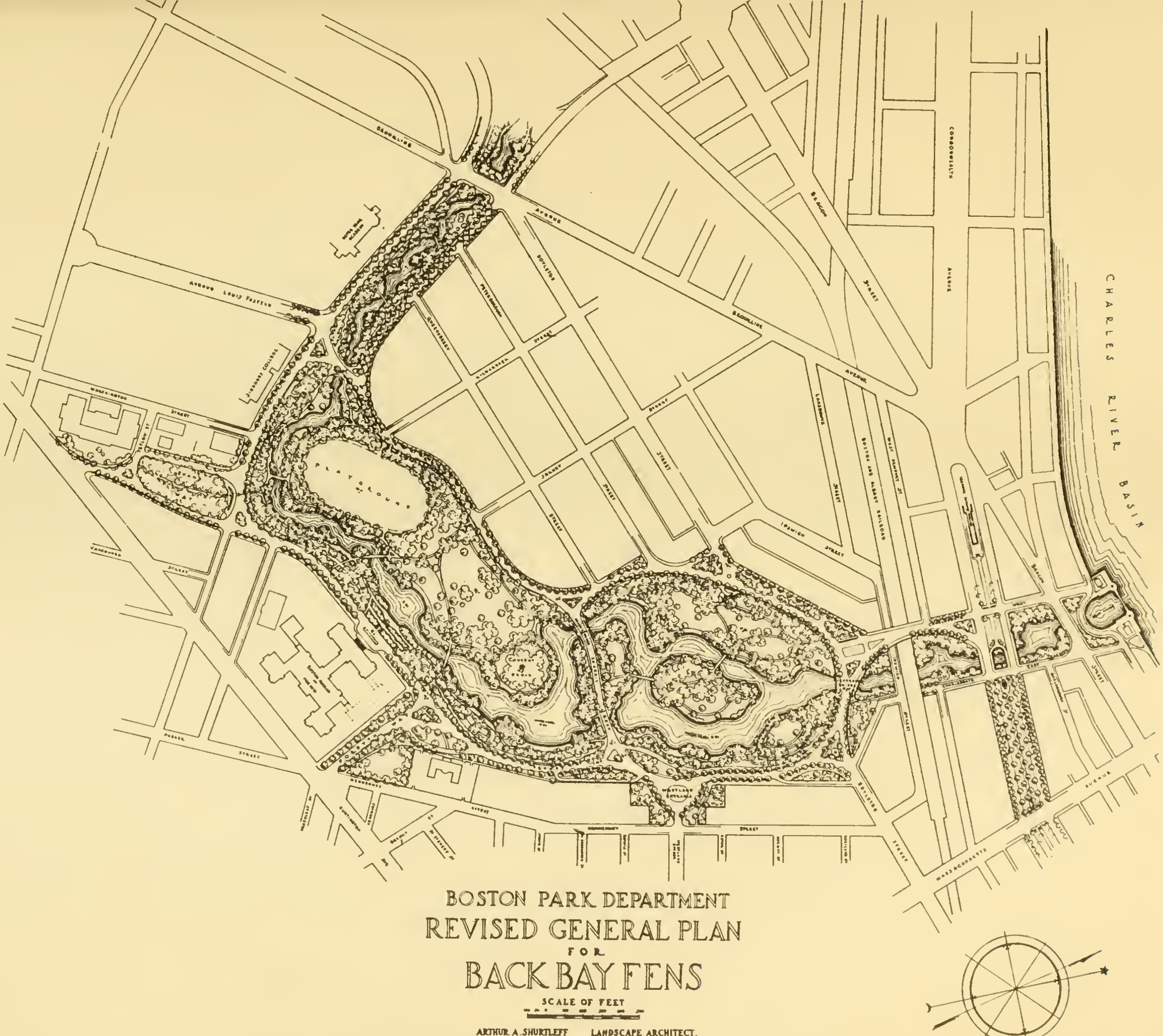
1887 Frederick Law Olmsted. A revised master plan showing changes in the water channel and pathway system. Parkland development was extended upstream along the Muddy River toward Leverett Pond.


PARK DEPARTMENT – CITY OF BOSTON
MAP
of the
BACK BAY FENS
COMMONWEALTH AVENUE
BEACON STREET
and
AUDUBON ROAD
SCALE
COMMISSIONERS
Benjamin Dean
Patrick Maguire
John Forrester Andrew
DIAGRAM
SHOWING
THE MANNER IN WHICH PUBLIC WAYS
ADAPTED TO PLEASURE TRAVEL
ARE PROPOSED AND IN LARGE PART HAVE
BEEN PROVIDED FOR CONNECTING THE SEVERAL
PLEASURE GROUNDS OF
THE COMMON, THE PUBLIC GARDEN, THE BACK BAY
FENS, CHESTNUT HILL, JAMAICA POND, THE
ARBORETUM, FRANKLIN PARK and MARINE PARK
CHARLES RIVER
BOSTON HARBOR
JAMAICA POND
COMMONWEALTH AVENUE
NEWBURY STREET
WEST NEWBURY STREET
BOYLSTON STREET
WEST CHESTER
WESTLAND AVENUE
MOUNTFORD STREET
DEPOT ST
BUTLER ST
BURLINGTON AVENUE
MINER ST
IVY
BEACON
CARLTON
MONMOUTH STREET
MONMOUTH COURT
BROOKLINE
CHATHAM
DUDLEY
COLCHESTER STREET
KENT
SEWALL AVENUE
ST PAUL
LONGWOOD
AVENUE
AUTUMN ST
PARK
BELLEVUE
FRANCIS
STREET

1896 Frederick Law Olmsted. Plan showing a major portion of Boston's "Emerald Necklace" of parkland as designed by Olmsted. The Back Bay Fens is linked with other major parks by lineal parkland containing separated traffic ways for foot, horseback, and carriage travel. Shade tree planting along all parkways and paths throughout the system provided the city dweller with a pleasurable country walk experience sharply contrasting with nearby developed urban areas.


CITY OF BOSTON — PARK DEPARTMENT
PAUL H. KENDRICKEN, FRANCIS A. WALKER, CHARLES F. SPRAGUE, COMMISSIONERS
PLAN OF PORTION OF
PARK SYSTEM
FROM
COMMON TO FRANKLIN PARK
INCLUDING
CHARLES RIVER BASIN, CHARLESBANK, COMMONWEALTH AVENUE,
BACK BAY FENS, MUDDY RIVER IMPROVEMENT, LEVERETT PARK,
JAMAICA PARK, ARBORWAY AND ARNOLD ARBORETUM
SCALES
BORDER ROADS
PLEASURE ROADS
BROOKLINE
CAMBRIDGE
CHARLES RIVER
CHARLESBANK
FENS
FRANKLIN PARK
FOREST HILLS CEMETERY

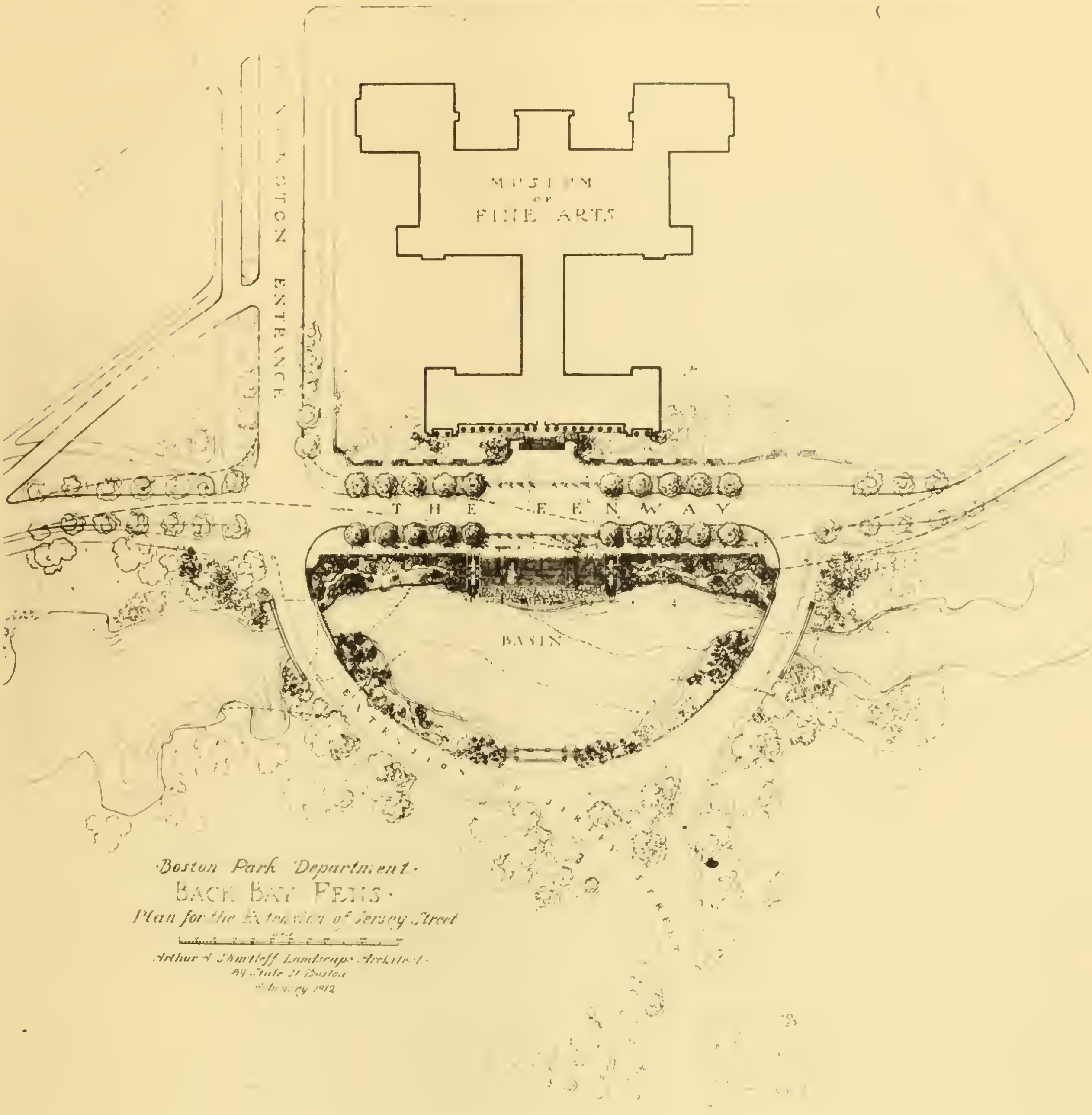
1921 Arthur A. Shurtleff, in consultation with the Olmsted landscape architectural firm. The master plan shows the low wetlands of the Fens in their existing filled condition. Filling occurred after the construction of the Charles River Dam in 1910 which prevented the natural tidal flushing of the Fens, causing the marshland to develop into a nearly stagnate waste water collection pond. The plan, however, still emphasizes a network of pedestrian paths, island development, and substantial land devoted to passive recreation.



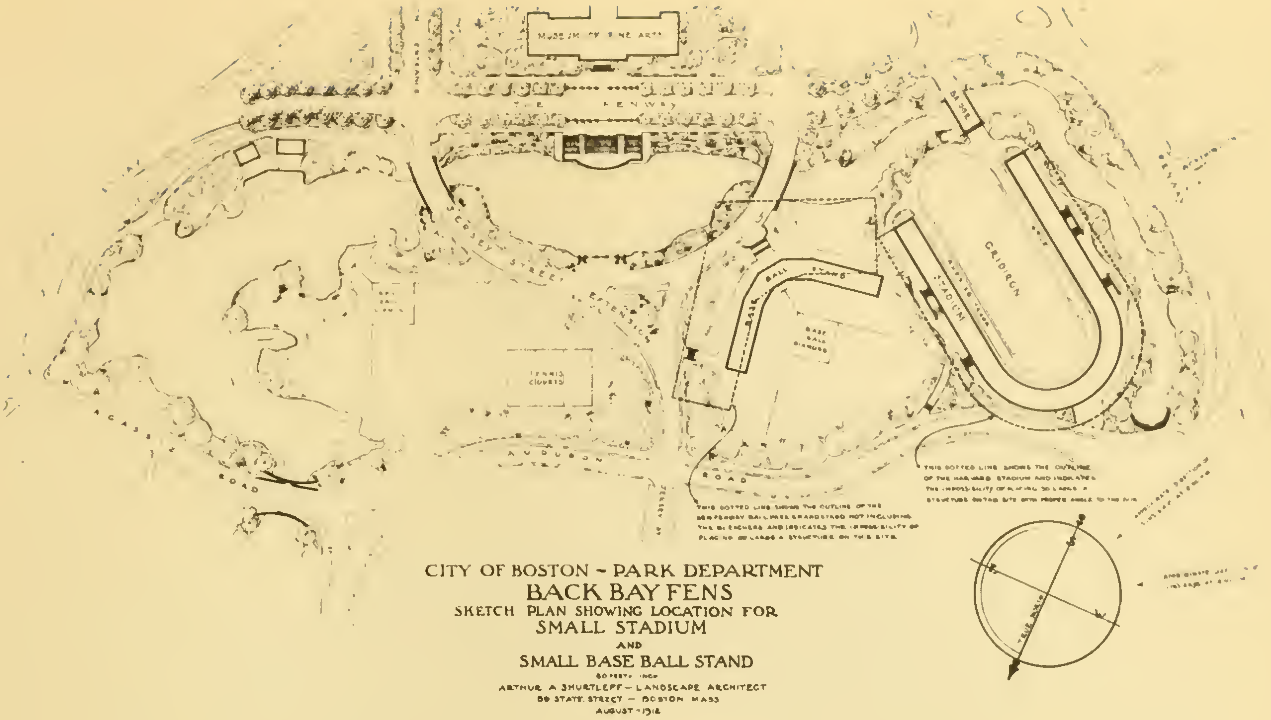
BOSTON PARK DEPARTMENT
REVISED GENERAL PLAN
FOR
BACK BAY FENS
SCALE OF FEET

ARTHUR A. SHURTLEFF LANDSCAPE ARCHITECT.
89 STATE STREET BOSTON — MASS.
IN CONSULTATION WITH OLMSTED BROTHERS, LANDSCAPE ARCHITECTS.
BROOKLINE — MASS.
NOVEMBER-1921.

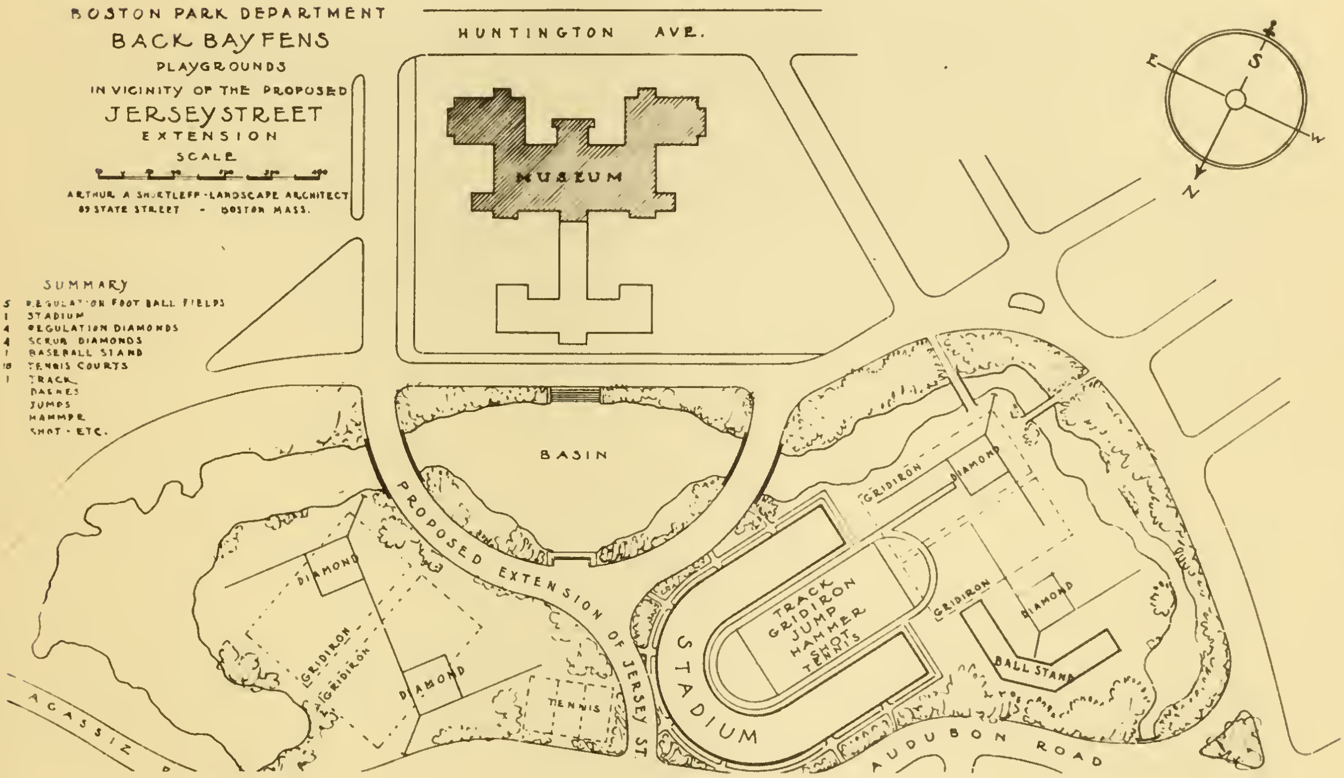
EARLY PARK DEVELOPMENT PLANS



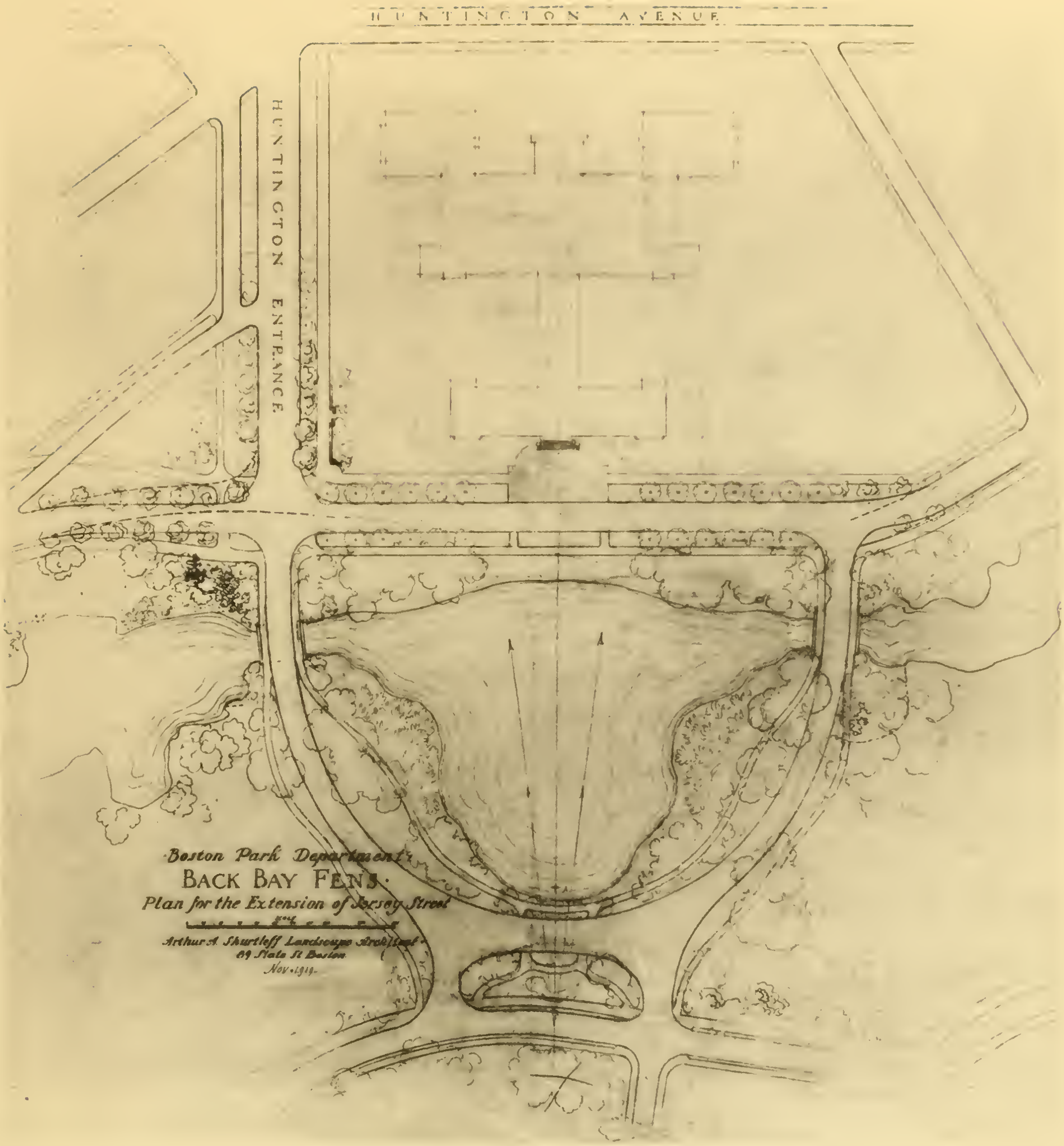
1912 Arthur A. Shurtleff. Proposed Jersey Street extension across the Fens from Audubon Road (Park Drive) to the Fenway.


MUSEUM OF FINE ARTS
THE FENWAY
TENNIS COURTS
BASE BALL STAND
BASE BALL DIAMOND
STADIUM
GRIDIRON
AUDUBON ROAD
AGASSIZ ROAD
JERSEY ST
THIS DOTTED LINE SHOWS THE OUTLINE OF THE HARVARD STADIUM AND INDICATES THE IMPOSSIBILITY OF PLACING SO LARGE A STRUCTURE ON THIS SITE WITH PROPER ANGLE TO THE AXIS
THIS DOTTED LINE SHOWS THE OUTLINE OF THE BROOKLINE BALL PARK GRANDSTAND NOT INCLUDING THE BLEACHERS AND INDICATES THE IMPOSSIBILITY OF PLACING SO LARGE A STRUCTURE ON THIS SITE
S
E
W
TRUE NORTH
CITY OF BOSTON ~ PARK DEPARTMENT
BACK BAY FENS
SKETCH PLAN SHOWING LOCATION FOR
SMALL STADIUM
AND
SMALL BASE BALL STAND
ARTHUR A SHURTLEFF — LANDSCAPE ARCHITECT
89 STATE STREET — BOSTON MASS
AUGUST ~ 1912

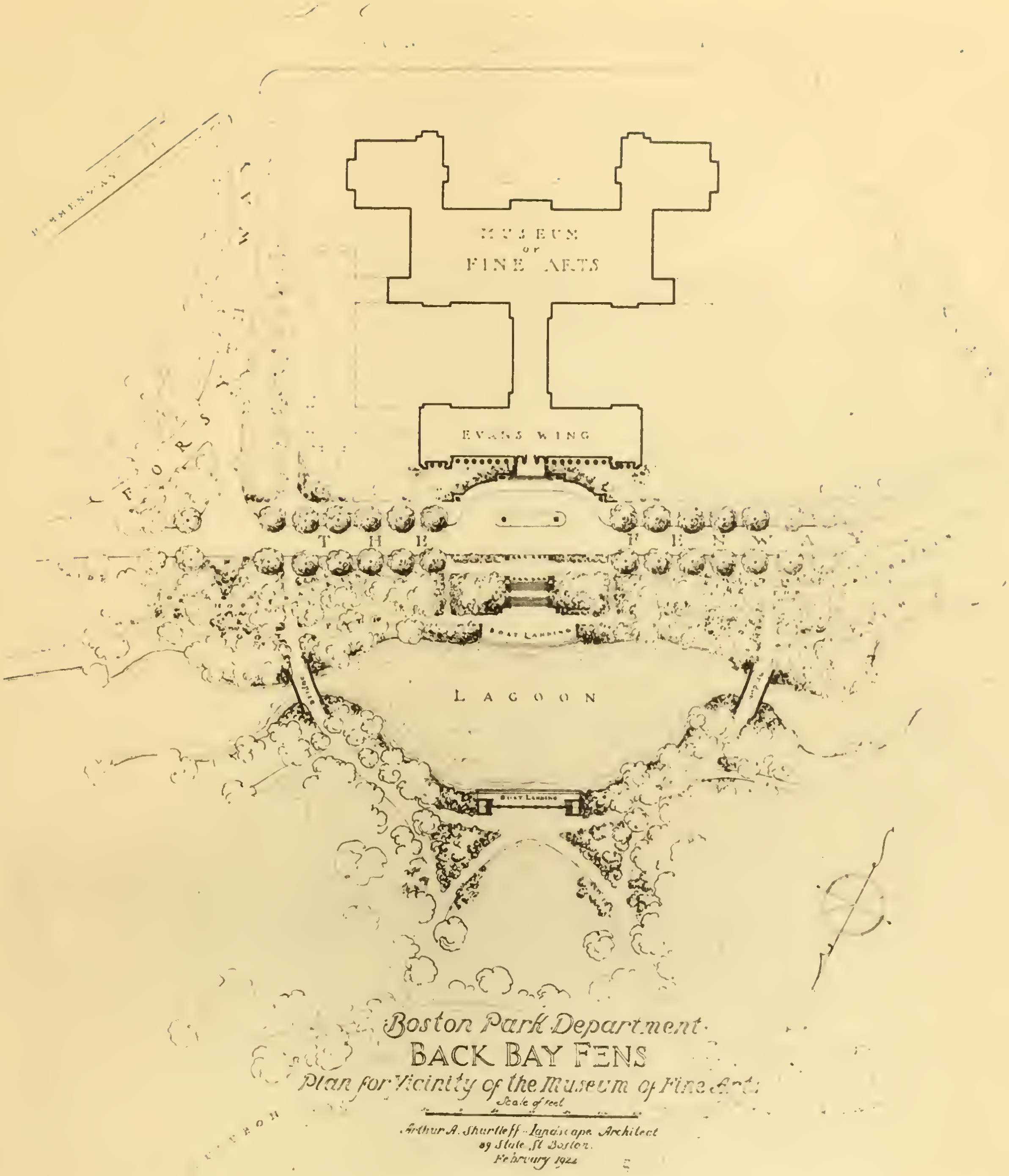
1912 Arthur A. Shurtleff. Athletic facility development proposal for filled Fens marshland.



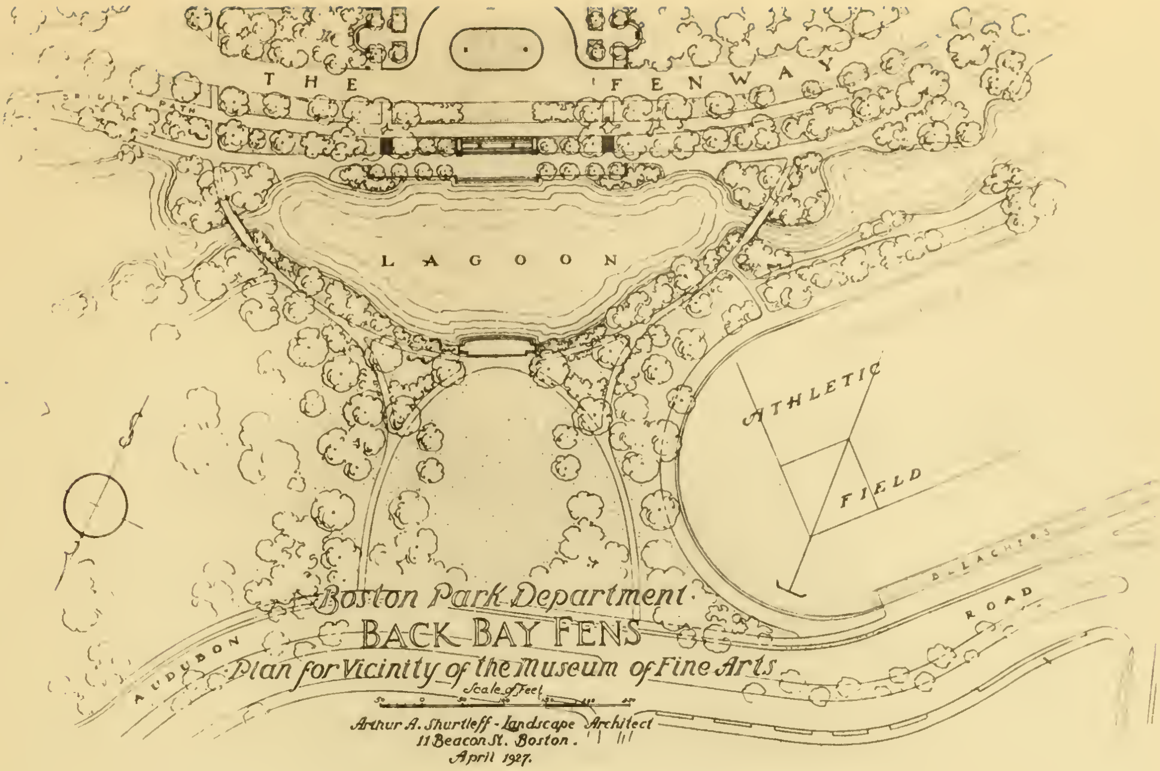
1912 Arthur A. Shurtleff. Athletic facility development proposal for filled Fens marshland.



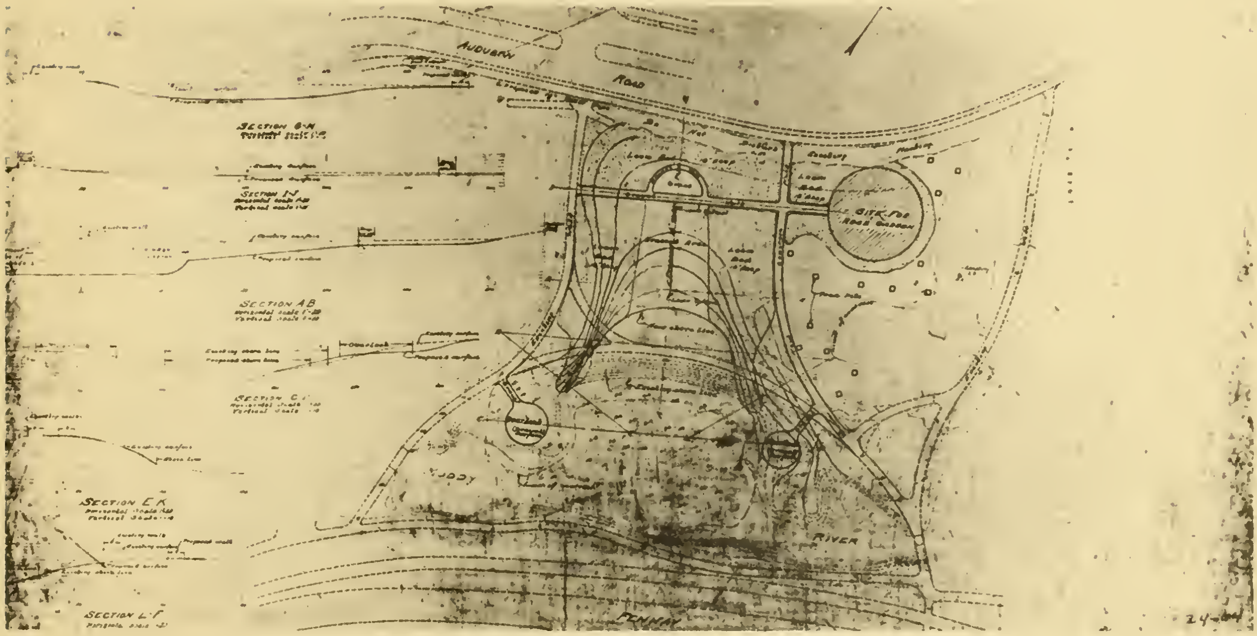
1919 Arthur A. Shurtleff. Proposed Jersey Street extension and lagoon development.



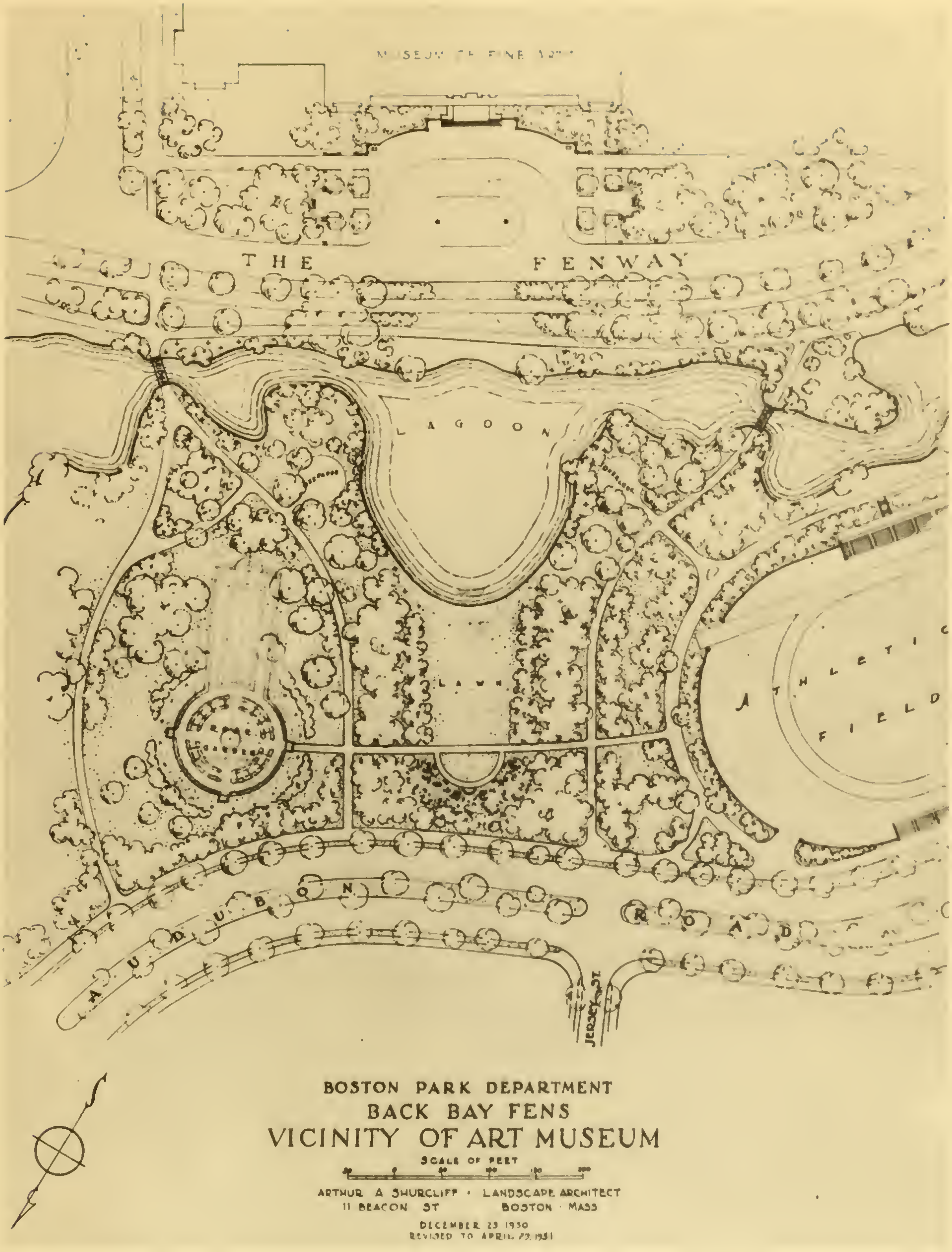
1922 Arthur A. Shurtleff. Proposed pedestrian walks and lagoon development opposite the Museum of Fine Arts.



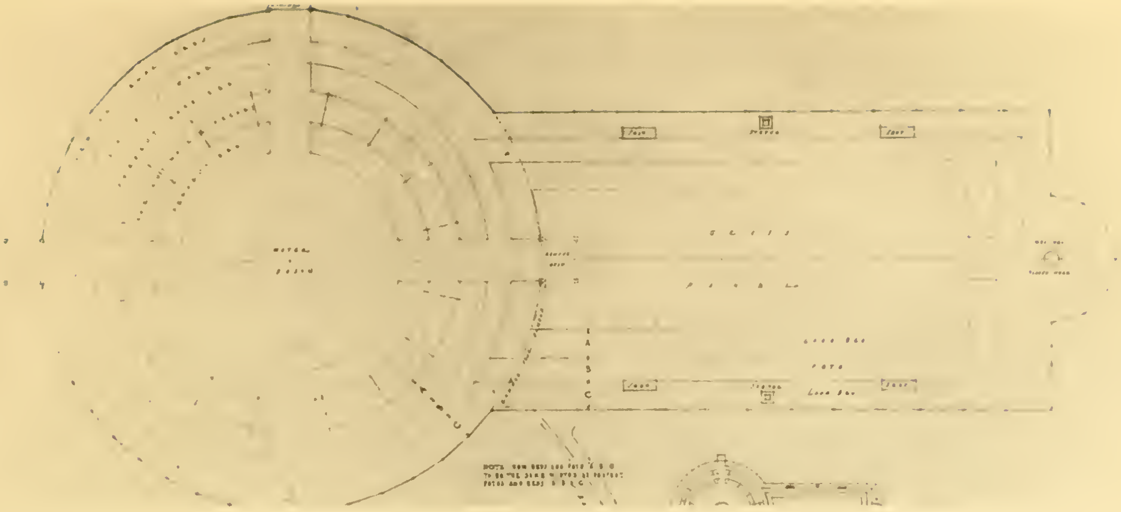
1927 Arthur A. Shurtleff. Proposal for Museum of Fine Arts, Evans Wing, entrance development, also showing the lagoon and athletic field layout.



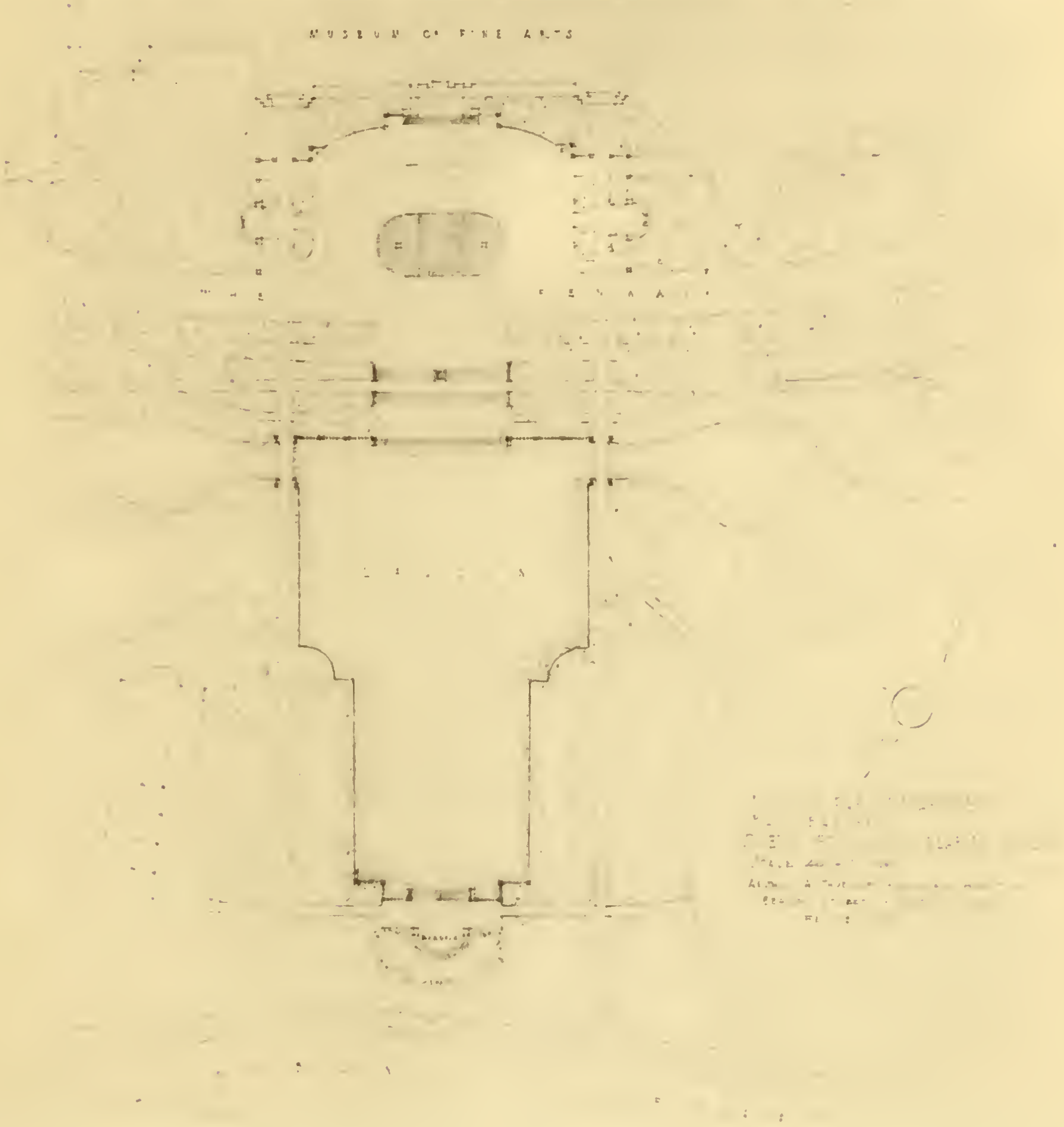
1930 City of Boston, Park Development. Grading and dredging plan for the lagoon and lawn area.



1931 Arthur A. Shurcliff. Plan showing layout of Back Bay Fens opposite the Museum of Fine Arts.



1931 Arthur A. Shurcliff. Plan showing the layout of the Rose Garden.



1933 Arthur A. Shurcliff. Proposed plan showing a redesigned lagoon and path system to complement the Rose Garden shape.

RECOMMENDATIONS

RECOMMENDATIONS

The purpose of this report is to set guidelines for park preservation and improvement. In this way, over time, incremental projects can be coordinated to maintain a continuity of construction materials and design theme.

The Preservation Master Plan was prepared with the assistance of both the City and Metropolitan District Commission. The plan recognizes work prepared during recent years by groups operating in the Fens area and uses survey and analysis information developed by the Metropolitan Area Planning Council in 1973.

ASSUMPTIONS

The basic assumption made in this report concerns water quality. It was assumed that water quality improvement recommendations made to the City of Boston by their Engineering Consultant, C.E. Maguire, Inc. will ultimately be implemented. When implemented, Back Bay Fens water quality will not represent the health hazard it does today and water depth will be adequate for recreational boating. In addition, it was assumed that the hydraulic dredging equipment including the dredge, pipeline and degritting plant, will be removed from the site when the operation is completed.

CONCEPT FOR PRESERVATION AND IMPROVEMENT

The historic past of the Back Bay Fens as well as present day needs were studied to develop the design objectives. In the review of early plans, those of Frederick Law Olmsted, Sr. expressed the following characteristics:

a) A park having a rural, naturalistic character; Olmsted intended that the park provide a green and relaxing contrast with nearby urban living areas.

b) A parkwide pathway network parallel to carriage ways connecting many park features.

c) A central water and wetland area toward which all features were oriented.

d) Wooded bordering slopes surrounding the wetland within which the paths and parkways were situated.

Plans prepared by Arthur Shurtleff also emphasize a similar atmosphere with pedestrian circulation crossing the parkland by means of bridges and stone dust paths. The Shurtleff plan was prepared 40 years after the plan by Olmsted. During that period, extensive wetland filling occurred providing the opportunity for interior parkland development.

Present day needs as expressed by city agencies and gained through frequent site inspections include the following:

a) The need for both passive and active recreation areas; although early plans emphasized only passive recreation, present day use indicates a need for both types of facilities.

b) A restoration of the water's edge and a return to water oriented park development. Heavy reed growth has separated land areas from adjacent water, changing the character of the northern park section.

c) The restoration of the park perimeter; paths, trees, and curbing are generally in poor condition needing replacement and/or reconditioning.

d) Public safety.

e) A low maintenance design solution.

The approach taken to prepare the master plan is one which respects the park character fashioned by early plans while introducing compatible improvements to satisfy contemporary and future needs. The design objectives are as follows:

a) To strengthen the outer perimeter of the park by restoring curbing, pathways and shade tree plantings. Park entries are to be better defined and designed to receive heavy use.

b) A reorientation of the park to the Muddy River and Fens pond.

c) Pedestrian pathway system improvements to allow easy walking access to all park areas without major pedestrian-auto conflicts.

d) The development of new and restoration of existing passive park areas.

e) The recognition of significant buildings bordering the Fens.

DESCRIPTION OF PROPOSALS - PARKWIDE SIGNIFICANCE

Vegetation/Clearing, Pruning

Existing Condition

--Back Bay Fens vegetation exists in an overgrown condition in all areas of the park excepting the Rose Garden, War Memorial section. With views blocked and hidden outdoor spaces screened, crime is known to be encouraged. Excessive quantities of overgrown vegetation have deteriorated the visual quality of the park.

Design Improvement

--It is recommended that a parkwide effort to remove low growing brush and saplings, including their roots, be undertaken as a top priority. Major trees should remain as these are a part of early designs for the Fens. It is felt that this program will improve the visual quality of the park immeasurably.

--A special problem, unique to the water's edge in the northern section of the Back Bay Fens, entails the method used for selective clearing of the giant reed Phragmites australis which thrives at the water's edge. Two control techniques have been explored in this study: regular mowing and shore treatment/dredging. Both techniques appear to be useful in areas of the Fens; see Appendix C.

Pathway System

Existing Condition

--Many walks are heavily worn with the old layers of stone dust mixed with silty clay to form a dense surface that drains poorly; subsoil material has worked its way up through the surface stone dust.

--Cobblestone edges lining all stone dust paths are frequently out of alignment due to a deterioration of the path itself, erosion, and heavy maintenance vehicular use.

--Many paths exhibit puddles, mud holes, and evidence of poor drainage in low lying areas.

Design Improvement

--Restoration of the path system is essential for park improvement; paths are useful today as they were when the park was first designed by Olmsted.

--The paths closest to the Fenway and Park Drive should be paved in bituminous concrete for use as a bicycle path as well as a pedestrian walkway. This outer path system is to be built having a width of 8 feet to allow opposing bicyclists to pass. Bituminous concrete is also to be used as pavement on steeper paths to overcome erosion problems.

--The lower path nearest the Muddy River on the Fenway side is to be paved in stone dust. The path width is to be 10 feet.

--The existing edging on all paths is to be removed because the edge is not an absolutely essential visual feature and because the cost of rebuilding it permanently is so great that this expense is not justified. Paths should be constructed as described in detail 7.

--The paths are to be built to withstand occasional truck and car traffic which is necessary to maintain safety and park maintenance.

--Paths contemplated to be built in the future should be carefully designed to avoid removal of major trees. See detail 13.

Curbing

Existing Condition

--Nearly half of the curbing surrounding the Fens is missing or substantially deteriorated. This condition results in poorly defined edges separating cars from pedestrian ways. Car parking/driving on paths is a problem, particularly in the Simmons College and Emmanuel College area of the Fenway. Missing curbing also contributes to erosion of sidewalk/curb planting strips and steeper slopes near perimeter streets.

--At bridge crossings (Richardson Bridge, Agassiz Bridge, Higginson Circle Bridge, and Brookline Avenue) existing concrete curbing is in good condition. The remainder of the existing curbing consists of mortared granite cobble set at a 45 degree angle at the perimeter of the park. Much of the granite cobble curb is set low in respect to the pavement due to the resurfacing of streets during past years.

--The MDC is considering the implementation of a proposal to remove the parkside parking lane of the Fenway and establish a new curbline and landscaping in the widened park border.

Design Improvement

--New vertical curbing surrounding the park is essential for the preservation of perimeter lawns, trees and pathways.

--Curbing should be vertical, exposed six inches at a minimum, granite.

--Several curb lines are proposed for removal in the master plan. The curblines on either side of Agassiz Road and the east lane of Park Drive are to be removed as those streets are dedicated to park use.

Curb Planting Strip

Existing Condition

--Many trees (lindens, maples, oaks) are in deteriorated condition due to salt injury to roots, exhaust from heavy traffic, compacted soil surface and growing medium which has caused greatly reduced percolation of rain water. Trees frequently have several limbs that are dead; leaves generally discolor early (shrivalled and brownish by late August/early September) due to the poor growing conditions.

--The MDC is proposing to broaden the park by 8 feet along the Fenway, preempting parking spaces, providing a much wider planting strip between walks and new curbing. The strip is to be landscaped with additional shade trees and turf.

--The MDC is also contemplating a narrower sidewalk and new curbing along Park Drive in the Muddy River section opposite Emmanuel College.

--Turf is worn where cars have parked or driven; erosion problems have also removed topsoil. In many areas, park users have worn dirt paths.

Design Improvement

--MDC park perimeter projects along the Fenway and Park Drive as well as the closing of Agassiz Road and the east lane of Park Drive will greatly improve the growing conditions for shade trees and turf at the park edge.

--Soil medium should be tested and specifications prepared for shade tree soil amendments.

--Water is the key to good tree growth at the park perimeter. Grading should attempt to prevent water runoff and encourage seepage into the root area. Should the recommended detail (Detail #12) result in a collection of some road salt around the tree base, the additional water will provide adequate leaching.

Vehicular Barriers

Existing Condition

--At the present, streets surrounding the Back Bay Fens are heavily used connectors supplementing major traffic arteries in Boston. Heavy traffic, particularly through the park on Agassiz Road represents a major barrier to park use that must be dealt with whenever the park user enters, leaves, or moves from north to south or vice versa.

--In addition to moving vehicles, nearly all areas of the park border on a parking lane that is heavily used.

--Traffic is heaviest in early morning, through the afternoon hours, and after evening baseball games at nearby Fenway Park.

Design Improvement

--The master plan recommends that the east lane of Park Drive and Agassiz Road be closed to traffic and landscaped. In this way, vehicular intrusion will be greatly reduced.

--The removal of Agassiz Road as a traffic carrier is most significant to improving park quality. It will allow a unified park system to flow from Richardson Bridge to beyond the Athletic Field at Higginson Circle.

Entry Points

Existing Condition

--The Back Bay Fens major entry points can be listed as follows:

a) The area between Mother's Rest and the Fire Control Center.

b) Both ends of Agassiz Road

c) Forsyth Way entry near the Japanese Temple Bell

d) Evans Way entry

e) Higginson Circle entry

f) Jersey Street entry

g) The lower, middle and upper Victory Garden entries

h) Worn paths at the Emmanuel College Fill area.

--These and other informal access points worn by convenient use display heavy wear and a need for durable, yet appropriate pavements and edges.

Design Improvement

--Park entry points have been redesigned on the master plan to assure that paths, pavements and materials are appropriate and located where needed.

--The elements and materials utilized in the redesigned entries are similar, to provide a vocabulary expressing an image of the Back Bay Fens Park.

--Walls, pavements, and stairways are the most important elements of the redesigned entries.

> Walls--2 feet in height, 1 1/2 feet in thickness--constructed of seamfaced granite, exposed surfaces to be brown or tan in color matching other stone used in earlier park structures. Walls are curved following path edges to carry and direct pedestrian traffic.
>
> Pavements--Pavements are predominantly bituminous concrete. Other pavements used in several areas include asphalt pavers (bridge surfaces), durax granite block set in mortar, or reused existing cobble edge stone set in mortar, and stone dust. The pavements are varied and selected to express use and accommodate slope changes.

Steps--Granite steps having a 6 inch riser are used throughout the park.

Abutting sitting walls and/or cheek walls are to be constructed of brown/tan seamfaced granite stone matching other stone used in earlier park structures. Mother's Rest stairway is designed with a wrought iron railing on both sides; the stairway and walls are granite.

Fill Removal

Existing Condition

--During recent years, the Muddy River Channel has been filled in certain sections to accommodate the needs of the automobile. Three sections of the River have received fill:

a) The Higginson Circle area was filled to provide land for a future traffic loop which was to be a part of a revised traffic circulation system in the area. The traffic circulation plan was never adopted. The fill area remains an eyesore covered with brush and sparse grass and is used as a pedestrian crossing point along a network of worn paths.

b) At Brookline Avenue a jug handle road is constructed to allow convenient left turns from Brookline Avenue onto Park Drive. The area is mowed and planted with young Pin Oaks.

c) The Muddy River in front of the Sears and Roebuck Company is filled and paved to accommodate the cars of employees as well as customers of Sears.

--The flow of the Muddy River has been placed in a series of conduits under the filled areas. A majority of the river's flow is diverted from under the Sear's parking lot to the Brookline Avenue conduit and directly to the Charles River. During heavy flow periods, a portion of the river's water overflows its Brookline Avenue gates and runs into the Back Bay Fens.

--The fill and conduits preclude the use of the Muddy River for boating, a significant recreational feature found in early park plans.

Design Improvement

--It is recommended that the areas of fill be removed to restore the park to its original character. The newly excavated banks of the river should be relandscaped to provide a scenic environment with soft edges.

--With proper planning, a portion of the excavated fill can be used in other sections of the Back Bay Fens.

--It is proposed that canoes will be able to navigate through the excavated channels to the upper reaches of the Muddy River. In addition, to develop a boating route, sewage conduits under Brookline Avenue and the Sears parking lot must be relocated, and probably new bridges built at Higginson Circle, Brookline Avenue, and Park Drive.

Islands

Existing Condition

--Islands do not exist in the park at the present time. However, historical plans show several proposed islands with connecting bridges to enhance the walking and visual experience of the park.

Design Improvement

--The Agassiz Island is to be formed by dredging a channel across the narrow neck of the peninsula. The resulting dredge material is to be placed opposite Mother's Rest to form a new island at the Long Boardwalk Bridge. In this way, water displacement will be equalized as the two islands are formed. A small island is shown located opposite Emmanuel College in the Muddy River. This is to be formed during the excavation of the Muddy River Channel. The islands have been designed to enhance the park user's experience. All islands are to be landscaped.

Pedestrian Bridges

Existing Condition

--Two pedestrian bridges are presently in use at the Back Bay Fens. One is located at the major park entry opposite Evans Way (Long Bridge) and the other at the Rose Garden entry opposite Forsyth Way. Both bridges are of wooden construction with stone or concrete foundations. Evans Way bridge is constructed of wood with an asphalt walking surface placed over the wooden bridge deck. Neither bridge is designed for vehicular access.

--The Evans Way Bridge is in poor condition with its deck deteriorating and railing sections frequently missing. The Forsyth Way Bridge, even though temporary in nature, is solidly built of wood beams and plywood flooring.

Design Improvement

--Bridges are integral structures in the park path system. Historical drawings indicate that bridges played a major role in pedestrian access to park facilities. Based on this background information, bridge replacement and the construction of new bridges is an important emphasis of the master plan.

--Four stone bridges are recommended in the vicinity of the more formally maintained park areas (Fine Arts and Gardner Museum park sections). The bridges are:

1) A new bridge across the channel forming the proposed Agassiz Island

2) The Rose Garden Bridge opposite Forsyth Way

3) The Lower Museum Bridge which is presently missing

4) The Evans Way or Long Bridge.

It is recommended that the bridges be constructed of reinforced concrete; the exterior to be surfaced with brown seamfaced granite veneer. The bridge deck surface should be asphalt pavers; sidewalls to be 2 feet high sitting walls built of the same stone. See detail 10.

--It is intended that the bridges be built to accommodate an automobile or a small truck (ten feet in width). The bridge span is to be arched.

--Three wooden boardwalk bridges are proposed for location in the naturalized portions of the park. The bridges are planned to carry heavy pedestrian traffic at locations that are central between other distant crossings.

--Wooden bridges are located on the Muddy River between 1) Mother's Rest and the Victory Gardens; 2) between Agassiz Park and the Victory Gardens and 3) opposite Emmanuel College between the Fenway and Park Drive.

--The wooden bridges are to be raised and ramped in their center section to accommodate boating traffic. Construction is to be of heavy wooden timber with railings to be wooden, substantial, yet not appearing coarse or bulky.

DESCRIPTION OF PROPOSALS - MATERIALS AND FURNITURE

Materials - Stone

Existing Condition

--Existing stone work in the park is excellent. Agassiz Bridge is finished in conglomerate "Pudding Stone" with a granite cap. Richardson Bridge is ashler granite having a distinct brown cast. Other permanent early structures such as the Gate Houses I and II, and Agassiz Park shelter are brown ashler stone similar to the Richardson Bridge.

--Other stone work in the park is found in the Fire Control Center and the Field House at the Athletic Field, both of which are constructed of light colored granite (the Fire Control Building facade contains both light and dark stonework).

Design Improvement

--New stone work in the Fens Park is detailed to be the same as that used in early park structures: brown ashler granite as found in the Richardson Bridge, the Agassiz shelter and Gate Houses. The stone is intended to be used as a veneer on concrete structures with sitting walls constructed of the same stone in larger thicknesses (one and two man sizes; solid stone wall). All walls to be masonry with raked joints.

--Brown seamfaced granite is available in quarries located in the Weymouth, Massachusetts area. Since not all quarried stone abuts a seam which imparts the brown stain, the desirable stone must be accumulated over a period of months; this should be recognized in future construction schedules.

Materials - Planting

Existing Condition

--The Back Bay Fens contains many plant materials including both shade and ornamental trees suitable for growing in dry or wetland soils. There are three general classes of materials found in distinct park areas: Trees found in the park perimeter (original plantings in well-drained soil) include Oak, Maple, Linden, Ash, Tree of Heaven, and Hackberry. The central park area (newer plantings on filled soil) generally contains ornamental species such as flowering cherry, crabapples or Hawthornes; the lower wetland areas contain Willows, Phragmites reeds and water plants such as Pickrel weed and cattails. The park contains no tall growing evergreens.

Design Improvement

--Shade trees are a prime consideration of the master planning stage. The intent has been to blend the same or compatible varieties with other existing species. Appropriate varieties include Oaks, Maples, Lindens in perimeter plantings and Crabapple to supplement ornamental species. Planting types and locations have been recommended which strengthen outdoor spaces, frame views and guide pedestrian and vehicular traffic.

--Evergreens have been used in limited quantity to provide contrast and focal point interest where an important panoramic view exists.

Furniture - Trash Containers

Existing Condition

--Trash containers used throughout the park are simply 55 gallon drums, some of which are painted with no uniformity.

--The park is in need of additional sites for waste containers, particularly in the park section opposite Emmanuel College. Solid waste accumulates near benches and in sections of the park where the brush has grown in heavily.

Design Improvements

--It is recommended that the waste container continue to be a 55 gallon drum. However, it should be placed on a concrete foundation. The drum can be fastened to wooden or steel posts to discourage vandalism and drained by holes placed in the bottom. Color should be consistent. See detail #2.

Furniture - Bench

Existing Condition

--Several types of benches are used in the Back Bay Fens Park:

a) Cast iron circular arm rests with wooden slats in the Victory Garden ("New York World's Fair")

b) Sheet metal on iron pipe frame located at the Brookline Avenue intersection

c) Concrete arm rest and legs with wooden seats and backs were found to be the most frequently used bench.

--Many benches are in disrepair; additional benches are needed throughout the park.

Design Improvement

--A selected bench for use in the Back Bay Fens should reflect a Victorian design influence, be decorative in nature, and impart an image of the Olmsted period (late 1800's).

--Several benches meeting this criteria exist. It was determined, however, that the most acceptable was a bench having decorative cast iron arms and wooden slat seats and back. See detail

--All benches when in place, are to have an appropriate pavement under the seat so as to prevent the formation of puddles and mud where heavy foot use occurs.

Furniture - Lights

Existing Condition

--Many portions of the Back Bay Fens are presently unlighted, a majority of the light being furnished by perimeter walks and streets.

--Acorn globe lights are being installed to the south of the Rose Garden on a heavily used walkway.

Design Improvement

--Acorn lighting was selected to be the most appropriate for use in the Back Bay Fens. The theme of the Acorn light is Victorian and in keeping with benches and other features of the early park design. See detail

--Only heavily used paths and walkways are to be lighted. Past experience has shown that crime can tend to increase if nighttime park use is encouraged by lighting sitting areas, play areas, and less essential walks. Proposed lighted walks at the Fens are those that are heavily used and carry pedestrians across the park rather than parallel to surrounding streets and sidewalks that are already lit. Walks to be lit:

a) Agassiz path (located in the right-of-way of Agassiz Road - removed)

b) East Rose Garden entry (Forsyth Way Bridge) to Jersey Street entry

c) Evans Way entry to Jersey Street.

--Parking lot lighting is to be accomplished by spotlights/luminaires attached to nearby buildings: Field House and Fire Control Center.

DESCRIPTION OF PROPOSALS - SPECIFIC SITES

Mother's Rest

Existing Condition

--Mother's Rest is presently in the northern section of the Back Bay Fens and contains an isolated young people's playground. Views to and from the area are blocked by heavy growth; access is gained by a single entry on the south. A wooden pavilion is located next to a timber sculpture playlot, the facilities of which are run down or lacking.

--Turf in the Mother's Rest area is in poor condition. The open lawn is in need of grading and rehabilitation.

--Recent improvements in this park section include a new stone dust path leading to the play structures, reconditioned play structures themselves, and new concrete and wood seats set in a granite pad.

Design Improvements

--A granite stairway on the north end of Mother's Rest to provide a second entry/exit point is the most important feature to be added in this area. See detail 5 for design features.

--A walkway is shown in the Master Plan providing access around the play area and pavilion so that through pedestrian traffic does not conflict with those using the play facilities.

--Clearing of brush and Phragmites growth is recommended to open views both for safety and an improved visual experience.

--Fencing should be removed near the water's edge and replaced near the pavilion and play area facility for safety purposes. The fencing should be wrought iron, 4 feet in height.

--A chain link fence presently exists along the Fenway sidewalk near Richardson Bridge. This fencing should be removed and replaced with a low stone wall similar to others described in this report. The wall will help make an attractive entry to Mother's Rest and the Fire Control Center area.

--The playfield is low and uninviting. The proposal includes filling and raising the surface approximately 1 foot with resodding to establish a new playing surface.

Victory Garden

Existing Condition

--The Victory Gardens were established in 1940 on filled land east of Park Drive in the northern section of the Back Bay Fens. The land was allocated to garden use so that interested Boston residents could supplement their food needs during the war years. The gardens remain in full use today.

--During the growing season a walk through the Victory Garden area can be a very pleasant and colorful experience.

--The garden area is bordered adjacent to the Fens pond by tall Phragmites reed growth which prevents visual association with the water's edge.

--Garden waste material is piled at periodic locations near the Phragmites growth along the edge of the easternmost bituminous walkway.

Design Improvement

--It is proposed to create a new water's edge park in the area of heaviest Phragmites growth abutting the Muddy River. The park is to be constructed by selectively removing Phragmites reeds (by dredging or mowing). In addition, two feet of fill is to be placed on the present muck soil and surfaced with 5 inches of loam and new sodding to provide a lawn area to the water's edge. Shade trees are proposed to be planted at the edge of the nearby bituminous walk to frame views to and from the water. The area is intended to provide passive recreation space similar to the lawn opposite the Fine Arts Museum.

--Waste centers should be placed at key locations along the bituminous walks for trash and garden waste. The waste centers should be designed to utilize a "dumpster" placed on a bituminous concrete pad. A surrounding wooden fence and/or planting can be installed to partially mask the facility. Ample space should be allowed for truck access. See detail 11.

--Fencing the entire Victory Garden to control vandalism is not recommended because it is unlikely that such fencing will successfully solve the problem.

Fire Control Center

Existing Condition

--The Fire Control Building is located on the Fenway, centered on an axis with the street line of Westland Avenue. The Fire Control Center was built in 1927 and is utilized by City of Boston fire and police personnel as a dispatch center for fire response coordination.

--Parking pavements exist on both the north and the south sides of the building. The north is for personnel parking, while the south is allocated to fire department vehicles.

--The function of the building is not compatible with nearby park uses, in fact, early master plans made no mention of such a facility.

Design Improvements

--The use of the Fire Control Center is proposed to be shifted to park maintenance, managed by the Boston Parks and Recreation Department. In this way, compatible park uses can be developed around the structure.

--Space allocation is recommended to be as follows:

a) The south paved area and main structure is proposed to be used by park vehicles and maintenance personnel. Walks and drives leading to and from the facility are designed to accommodate maintenance vehicles allowing access to all sections of the park.

b) The northern paved area and metal storage structure are proposed for use by the public as a boating facility. A dock is proposed to be built at the water's edge behind the boat/canoe storage building; the dock is to be fenced to assure that its use can be supervised.

Agassiz Bridge

Existing Condition

--The Agassiz Bridge is an excellent stone structure designed by H. H. Richardson and built in 1888. The bridge is constructed of brick arches and walls of conglomerate rock. Five arches are used to carry the surface of the bridge across the Muddy River. The bridge presently

carries heavy traffic and serves as the Agassiz Road entry as it crosses the Back Bay Fens. The bridge is the most significant structure in the Fens park and is within easy view of the manicured lawns surrounding the War Memorial.

Design Improvements

--With the closing of Agassiz Road, returning that portion to parkland, Agassiz Bridge will shift from vehicular to pedestrian use. It is to be redesigned as a plaza overlooking the Muddy River with views to the north and the south.

--Pavement on the bridge is to be asphalt pavers, laid at the same level as the bordering sidewalks on either side of the bridge.

--Benches on the bridge are to be large granite slabs placed on either side of the central access abutting the original sidewalk curbline.

--It is anticipated that the bridge can be used as a site for artist's and craftsmen's displays.

--The central portion of the bridge is to remain open allowing park maintenance and police vehicles to pass utilizing the old Agassiz Road right-of-way for infrequent travel from one side of the park to the other.

War Memorial

Existing Condition

--Well maintained lawns and plantings surround the War Memorial which is located north of the Rose Garden and east of Park Drive.

--The monument itself has been damaged to a small degree by vandalism; pavement surrounding some of the monument stonework has settled, and several stone benches in front of the lecturn have settled and tipped forward.

--The Memorial is in a central location, able to be seen clearly from the Agassiz Bridge.

Design Improvement

--The Monument and stone benches should receive the needed repairs.

--It is recommended that a planting of medium height shade trees be located in front of the lecturn to provide human scale and a sense of containment when devotion services are held.

--Several hedges of Taxus (Yews) at the rear of the War Memorial lawn appear to have little relationship to the site and lawn use. The Taxus are proposed to be relocated near the Rose Garden and Jersey Street entry to provide a transition and buffer between park uses.

Sewage Retention Facility

Existing Condition

--The construction of a sewage retention facility is a major long-run recommendation for improving water quality at the Back Bay Fens. The structure is intended to function as a settling tank for sewage before wastes flow into the Fens or sewage conduits. The structure is tentatively sized at 150 feet by 250 feet and is designed to handle all sewage flowing through Gate Houses I and II.

--The structure is designed to be located underground except for small above ground entrances. This provides the opportunity for the soil cover to be blended into the park surroundings by grading and landscaping.

Design Improvement

--It is recommended that the facility be located across the Muddy River from Gate Houses I and II underneath the War Memorial lawn. It is felt at this location that landscaping and grading can mitigate the detrimental effects that a facility of this size might have on the appearance of the Fens park.

--The alternative location, next to the Gate Houses, adjacent to the Fenway, would cause major disruption of the historic park edge and the loss of mature trees. Therefore, this location is not recommended.

Temple Bell/Fenway Rose Garden Entry

Existing Condition

--The Japanese Temple Bell is located at the junction of two major walkways near the Fenway entry to the Rose Garden.

--The foundation of the bell is tilted due to settling.

--Nearby uses are not compatible with a distinctive monument site: during summer months, trash and brush from the Rose Garden is piled around the monument and, maintenance personnel park their vehicles on a short path section near an incongruous wooden concession stand now used for maintenance storage.

--The entry is an important one in the park as the pathway connects the Fine Arts Museum with the Rose Garden.

Design Improvement

--The Temple Bell should be relocated toward the water's edge in a lawn area south of the present location. A narrow stone dust path is proposed to be built to and from the new monument site where it can be seen from the Museum of Fine Arts.

--A new appropriate maintenance storage structure is proposed to be built at the north entry of the Rose Garden. Once completed, the area near the lower end of the Rose Garden can be cleared of maintenance features and restored to landscaped park use.

--A small planting of flowering trees is proposed at the junction of the two walks and a small sitting area is proposed to be located between this planting and the Rose Garden itself.

Museum of Fine Arts - Entry and View

Existing Condition

--The Museum of Fine Arts borders the Back Bay Fens on the east side of the park across the Fenway between Forsyth Way and Evans Way. The Museum, with its formal columns, is the most dominant and significant structure bordering the park.

--A formal axial view exists from the entrance of the Museum on the Fenway through the Fens pond or lagoon, across the lawn area, to Park Drive in the west.

--Early plans by Shurtleff included many alternatives for recognition of the Museum's dominance.

--At present, the water body is the only feature that relates to the Museum within the Fens park. Small shrubbery interrupts clear views to and from the Museum.

--In the open lawn opposite the Museum, small Hawthornes are planted in a somewhat irregular fashion. The small trees appear to be growing poorly and do not have the mass necessary to enhance the site.

Design Improvement

--The master plan recognizes the museum structure by providing a granite stairway and walls leading from the Fenway to the lower stone dust paths. The stairway provides a subtle statement of the Museum's importance, and when viewed from a distance, provides a focal point in the panorama. The stairway area is designed to provide a viewing and gathering place for park users.

--Removal of the existing Hawthorne trees is recommended. The Hawthornes are to be replaced with groupings of large shade trees around the edges of the lawn space.

--The groupings of trees are to be placed to provide interest when viewed from the Museum at the pond edge, in the middle ground, and in the background. They are located to carry the viewer's eye from the water's edge to tall growing evergreens at the rear of the space.

Gardner Museum

Existing Condition

--Similar to the Museum of Fine Arts, the Gardner Museum is also a distinctive Boston landmark. Its fine architecture and unique collections make it a significant building in relationship to the Fens park.

--Opposing the Museum across the Fenway is a degritting plant for the removal of dredging solids. The plant is to be removed in several years, after the hydraulic dredging operation has been completed. Surrounding the degritting plant, the park is in very poor condition with overgrown plantings, worn paths, and delapidated benches.

Design Improvement

--The distinction of the Gardner Museum should be reflected in the design of associated parkland. It is suggested that a walled terrace and stairway be constructed opposite the entrance of the Museum, overlooking the Muddy River. The terrace is to be paved with asphalt pavers; walls to be built of seamfaced granite; granite steps lead to the lower stone dust walk. The granite walls are designed to be 2 feet in height, providing space for sitting; the terrace is to be lit with Acorn lights, one above and one below the stairway location.

--The surrounding area should be brushed out and restored to a clean condition.

Athletic Fields - Basketball Courts

Existing Condition

--Two full-sized basketball courts are presently located adjacent to the Jersey Street entry at the north end of the Athletic Field. The courts represent a significant intrusion in the more passive area of the Fens and provide a distracting view at that important location. Early master plans show that portion of the park allocated to pastoral lawns with distant views of the Museum of Fine Arts and ornamental plantings.

--The courts are in good condition. One is lighted and is bordered by permanent bleachers; built in 1970.

Design Improvement

--The basketball courts are to be relocated at the south end of the Athletic Field near the Field House where active recreation is a central focus.

--The courts are to be rebuilt to the same standards as they presently exist. It is felt that this location is more appropriate, being convenient to the Field House where compatible facilities are available. In addition, the public parking lot, which has been replanned is nearby to the south of the Field House.

--In conjunction with the relocated basketball courts, the children's play area is restored on its existing location. The play area is buffered from the basketball site by a low sitting wall and surrounding shade tree planting. The play area is near the Field House facilities and parking lot for safety and convenience.

--It is recommended that the soil structure be analyzed before construction of the basketball courts.

Athletic Field - Bleachers and Turf

Existing Condition

--The Athletic Field bleachers, built in 1927 on either side of the open field, are in very poor condition, having missing and broken wooden seats. A portion of the wooden surfaces have been replaced with aluminum seats.

--The Athletic Field turf is worn, exposing soil and drainage problems.

Design Improvement

--It is recommended that the wooden seats continue to be replaced with aluminum surfaces.

--The playing field should be reconditioned and sodded. A lasting turf can be achieved only through intensive maintenance.

Simmons College Lawn

Existing Condition

--Several of the main structures of Simmons College are located west of Evans Way entry facing the Back Bay Fens from across the drive. Parkland opposite the buildings contains an upper and lower path with the enclosed area partially filled with overgrown vegetation. One small section of this parkland is partially cleared, yet the area is not developed or maintained to its full potential.

--The park area is used for occasional sitting, studying, casual walking, and nature study during the warm months.

Design Improvement

--It is recommended that additional brush be cleared to open views to and from the facility. Standing near the main entrances, then, an individual would be able to view a shaded lawn with the Muddy River flowing in the background.

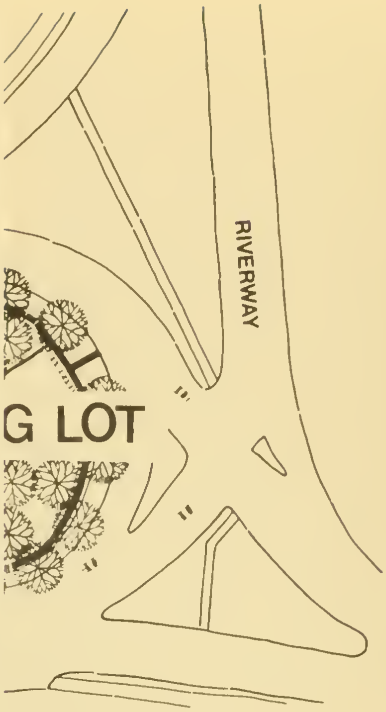
--The park grounds opposite the college should be given improved and regular maintenance to provide a campus atmosphere in this portion of the park. After clearing, some filling, grading, loam and sod will be necessary to provide a pleasing, gradual slope to the water's edge.

--The path next to the Fenway is to be paved with bituminous concrete, while the lower path, nearer the Muddy River, is to be resurfaced with stone dust.

SCHEMATIC PLAN

LEGEND

EXISTING DECIDUOUS TREES	○ & ○
PROPOSED DECIDUOUS TREES	✲ & ⊙
EXISTING EVERGREEN TREES	▨
PROPOSED EVERGREEN TREES	✺ & ⊛
M.D.C. PROPERTY LINE	▪ ▬ ▬▬▬ ▬ ▪
OLD CURB LINE	– – – – – – –
NEW PARK LAND	▧
WOOD BOATDOCK	□□□
WOOD BRIDGES	■ ■ ■ ■
STONE BRIDGES	● ● ● ●
STONE WALLS	◡
BITUMINOUS CONCRETE WALK	‖‖‖‖‖‖‖‖
CONCRETE WALK	▬▬▬▬▬▬
STONE DUST WALK	■|■|■|■|■
LIGHTS	▲
BENCHES	▬
TRASH	•
GARDEN TRASH	◈
PHOTO LOCATIONS	8↗



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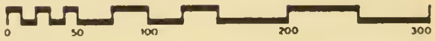

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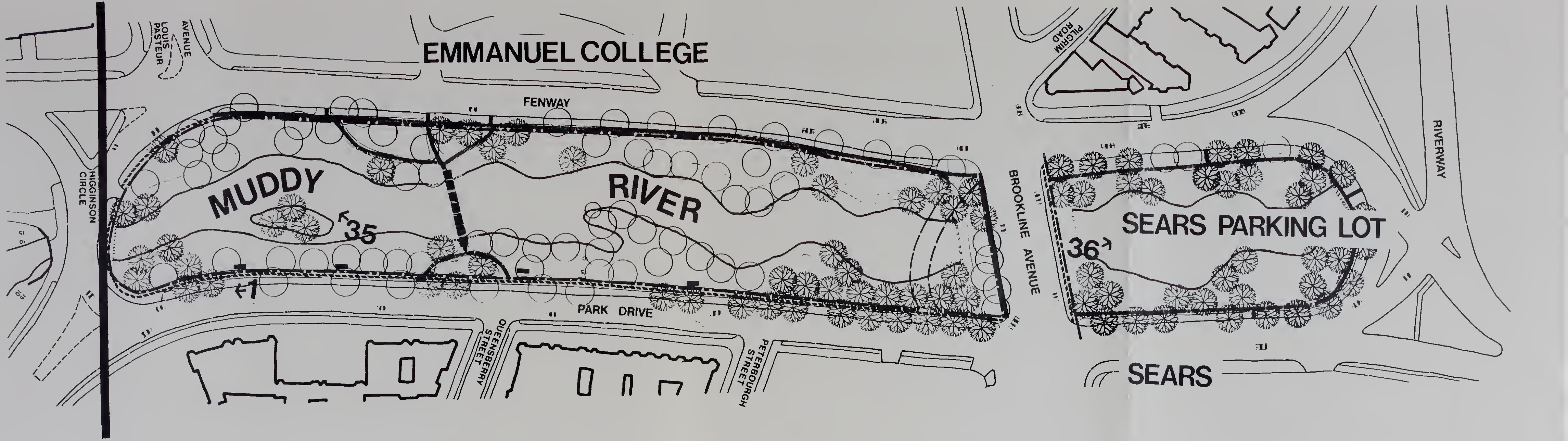

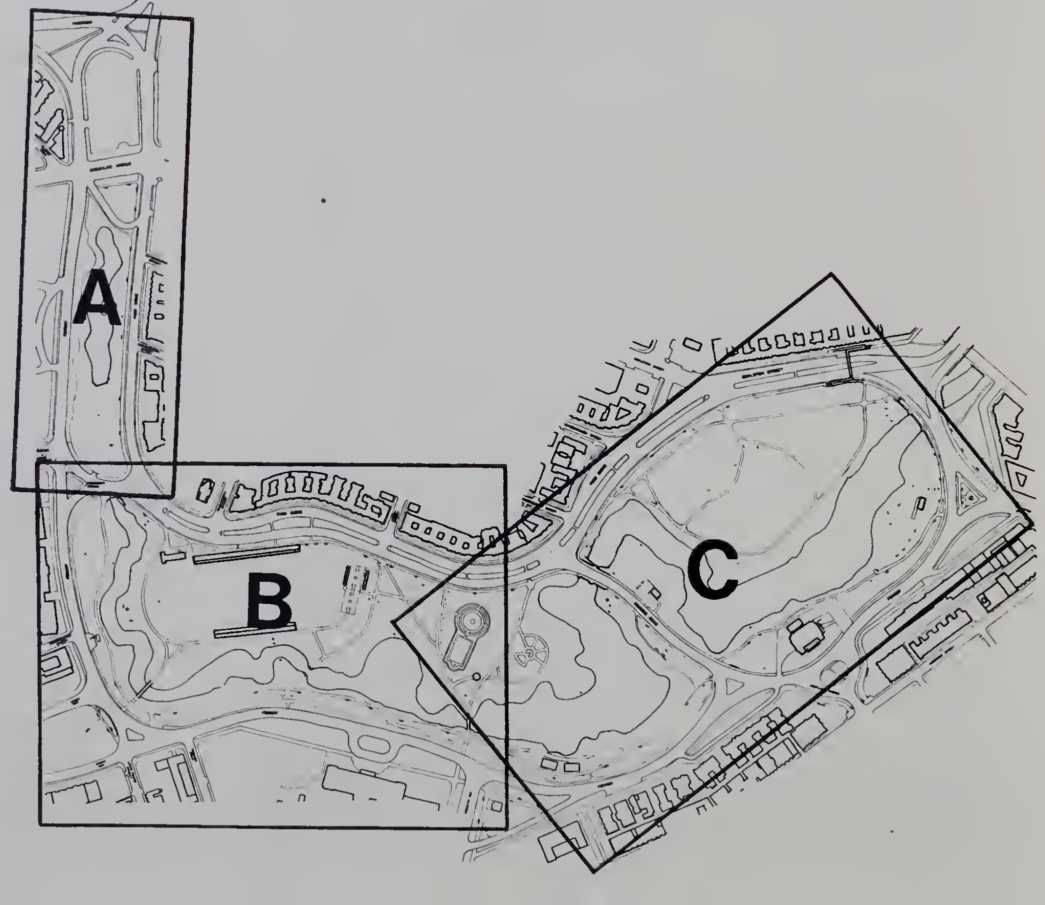

- The information presented in the schematic plan identifies the recommendations for specific park improvement proposals. Features which are shown include the boundary line delineating MDC maintenance jurisdiction, the location of proposed new tree plantings, suggested location of the sewage retention structure, pavement types and edges, and the location of lights, benches, and trash receptacles.

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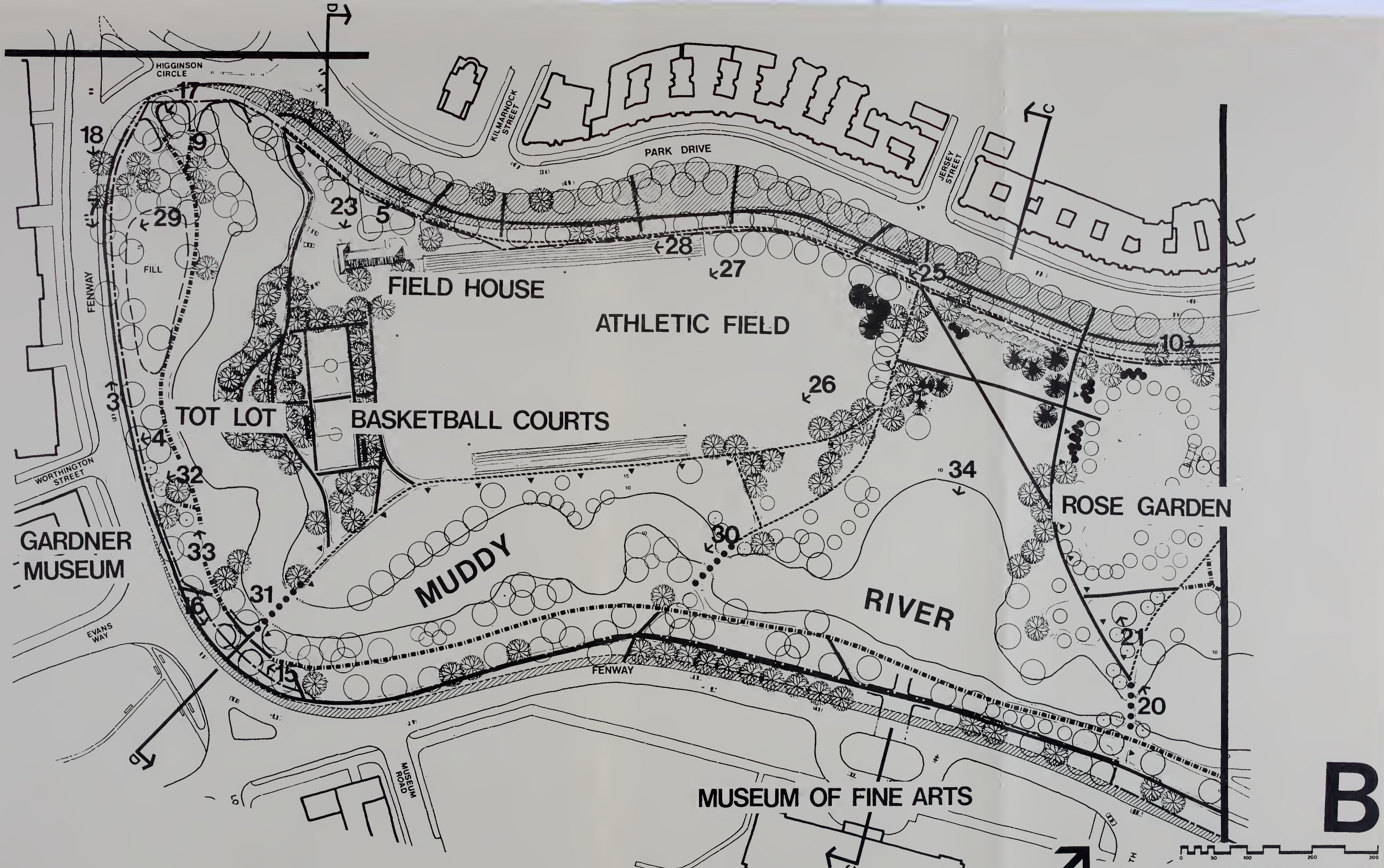
BACK BAY FENS RESTORATION

prepared for CITY OF BOSTON PUBLIC FACILITIES DEPARTMENT



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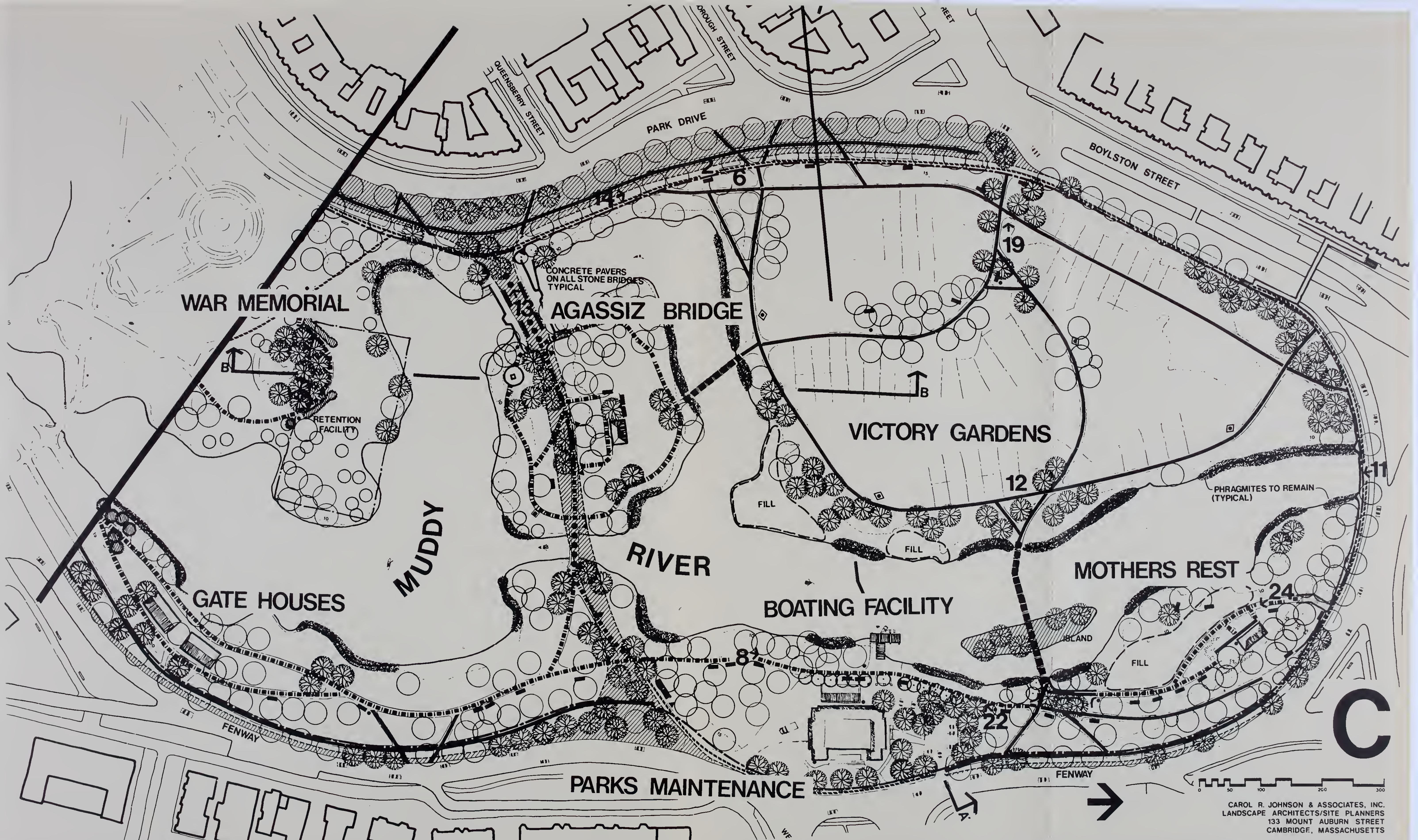

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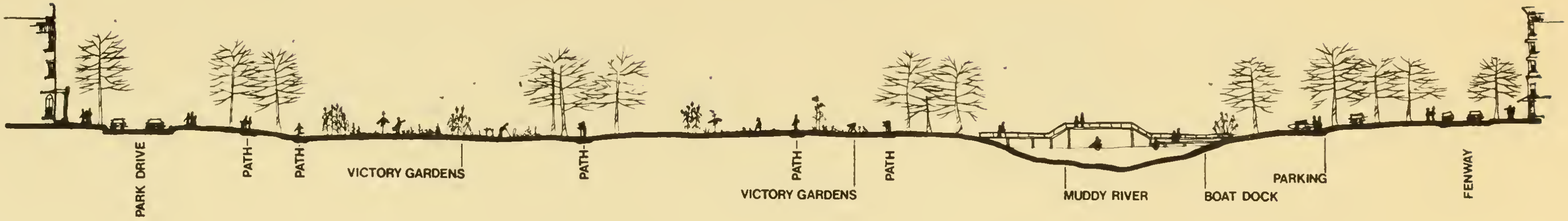
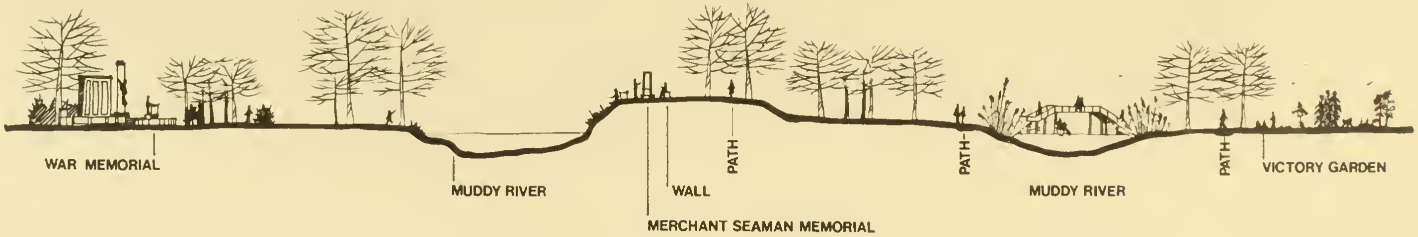
BACK BAY FENS RESTORATION

prepared for CITY OF BOSTON PUBLIC FACILITIES DEPARTMENT



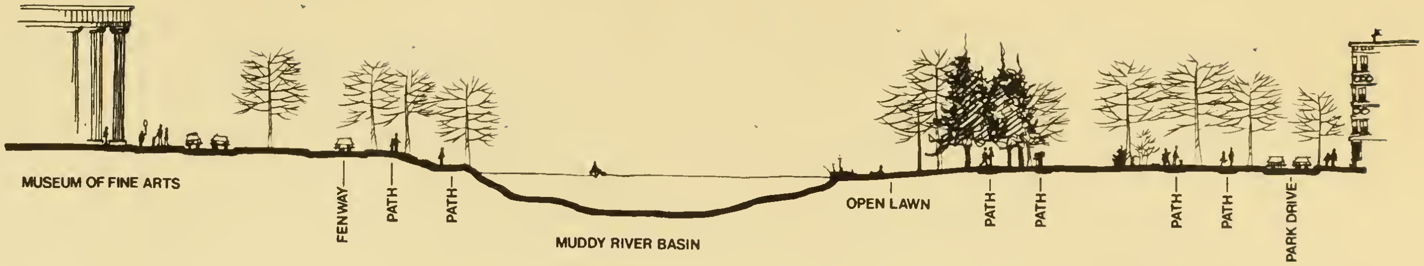
Section A-A'



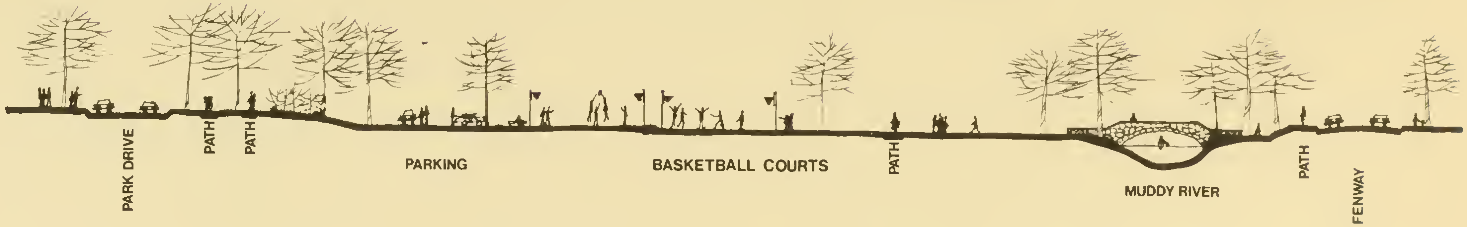
Section B-B'

SEE SCHEMATIC PLAN 'C'

CAROL R. JOHNSON & ASSOCIATES, INC.
LANDSCAPE ARCHITECTS/SITE PLANNERS
133 MOUNT AUBURN STREET
CAMBRIDGE, MASSACHUSETTS



Section C-C'

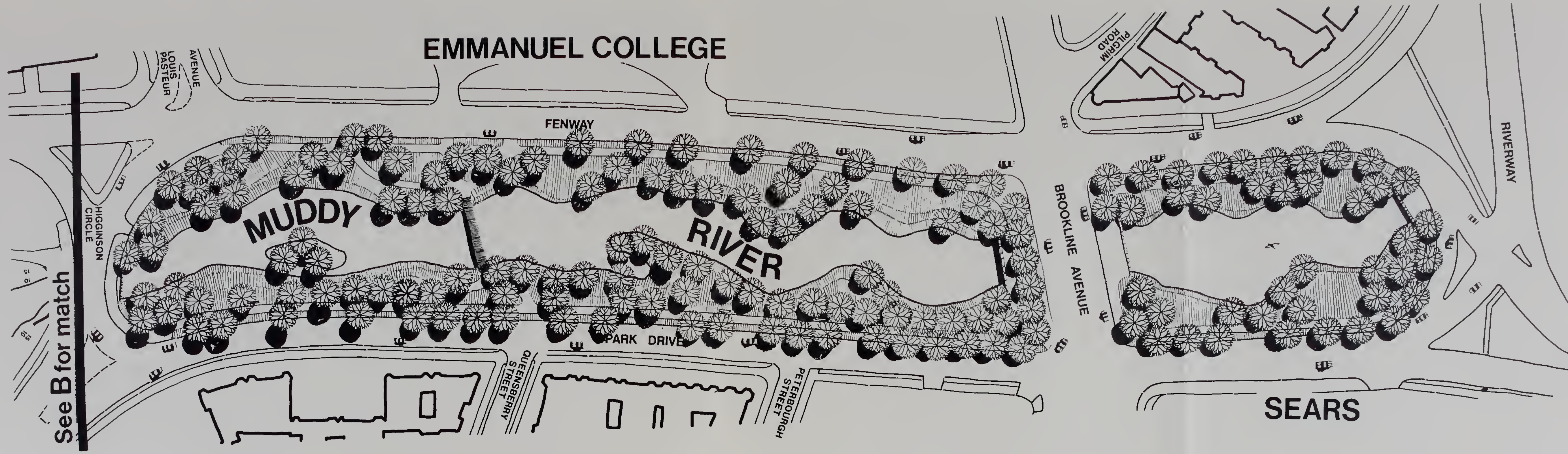


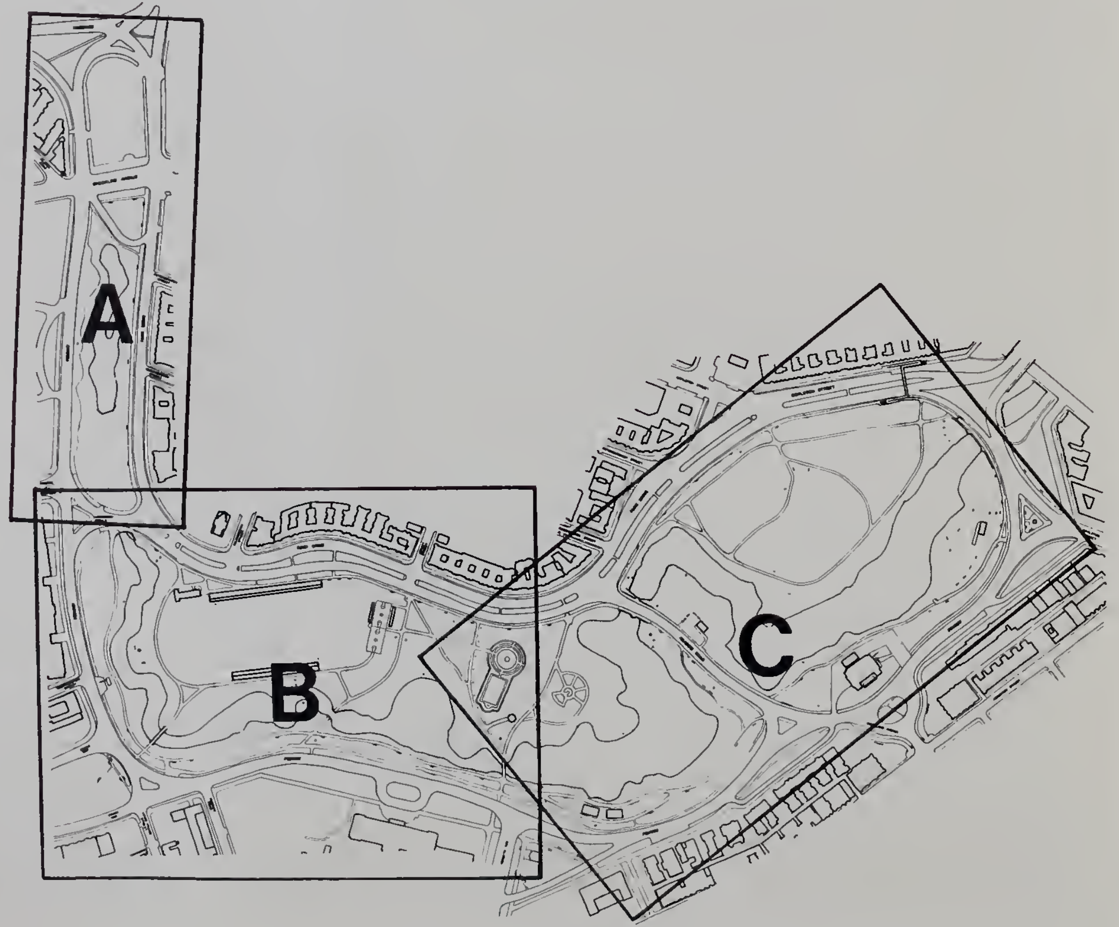
Section D-D'

SEE SCHEMATIC PLAN 'B'

CAROL R. JOHNSON & ASSOCIATES, INC.
LANDSCAPE ARCHITECTS/SITE PLANNERS
133 MOUNT AUBURN STREET
CAMBRIDGE, MASSACHUSETTS

MASTER PLAN

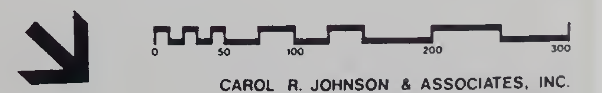




The Back Bay Fens Restoration Plan presents the major recommendations for park improvement resulting from this study.

- The reversion of existing streets to parkland; the east lane of Park Drive and the whole of Agassiz Road are shown as landscaped paths in park use.
- The strengthening of plantings and restoration of pathways around the perimeter of the park as originally set forth in early conceptual drawings by Olmsted.
- The excavation of the Muddy River channel from Higginson Circle through the Sears parking lot to allow boat access.
- Selective clearing of shoreline Phragmites reed growth to open views.
- The formation of islands to enhance the park experience.
- Replacement of existing bridges and construction of new boardwalks to improve pedestrian circulation.
- Improvements in the Athletic Field area including relocation of the basketball courts.

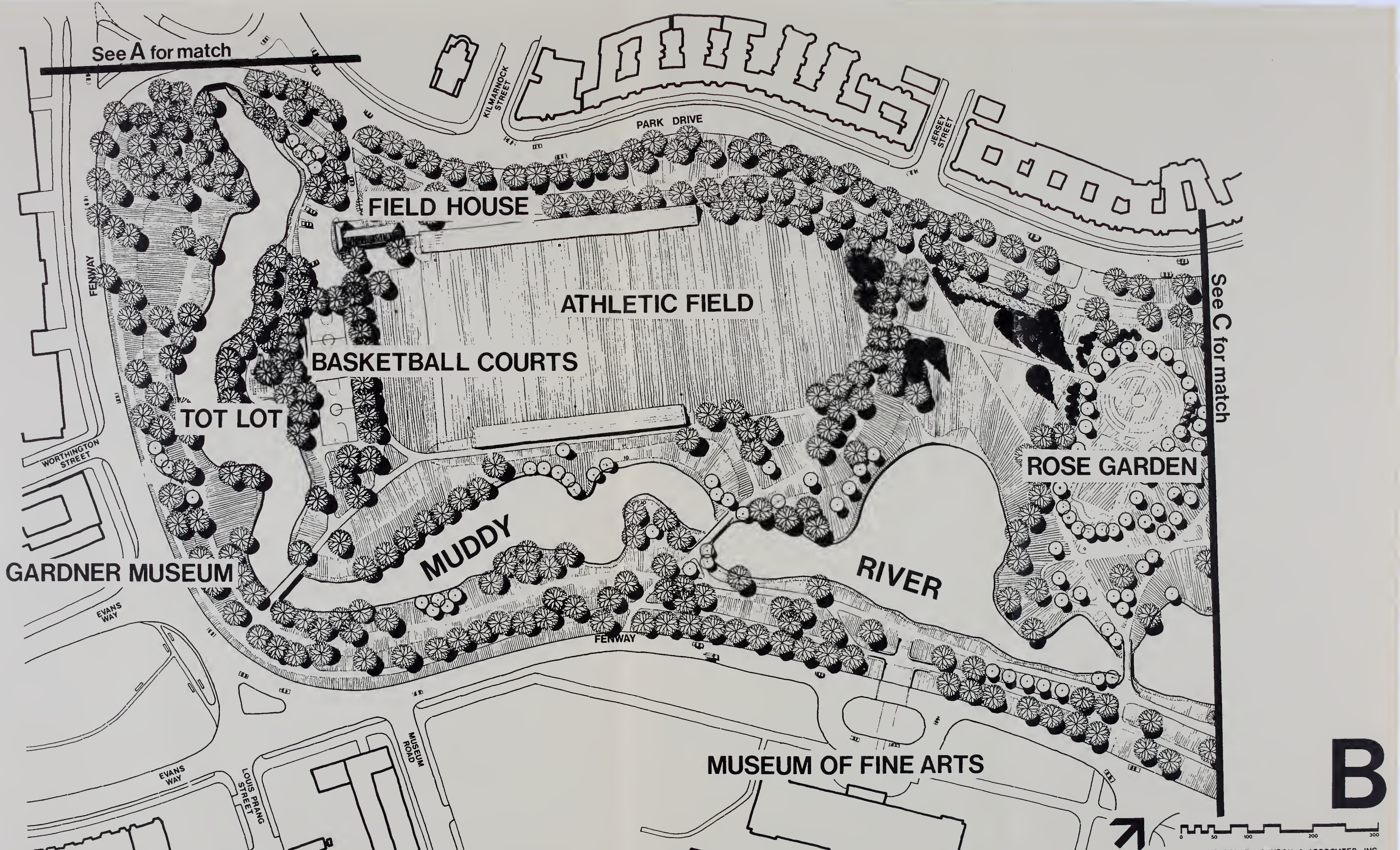
A



CAROL R. JOHNSON & ASSOCIATES, INC.
LANDSCAPE ARCHITECTS/SITE PLANNERS
133 MOUNT AUBURN STREET
CAMBRIDGE, MASSACHUSETTS

BACK BAY FENS RESTORATION

prepared for CITY OF BOSTON PUBLIC FACILITIES DEPARTMENT



CAROL R. JOHNSON & ASSOCIATES, INC.
LANDSCAPE ARCHITECTS/SITE PLANNERS
133 MOUNT AUBURN STREET
CAMBRIDGE, MASSACHUSETTS

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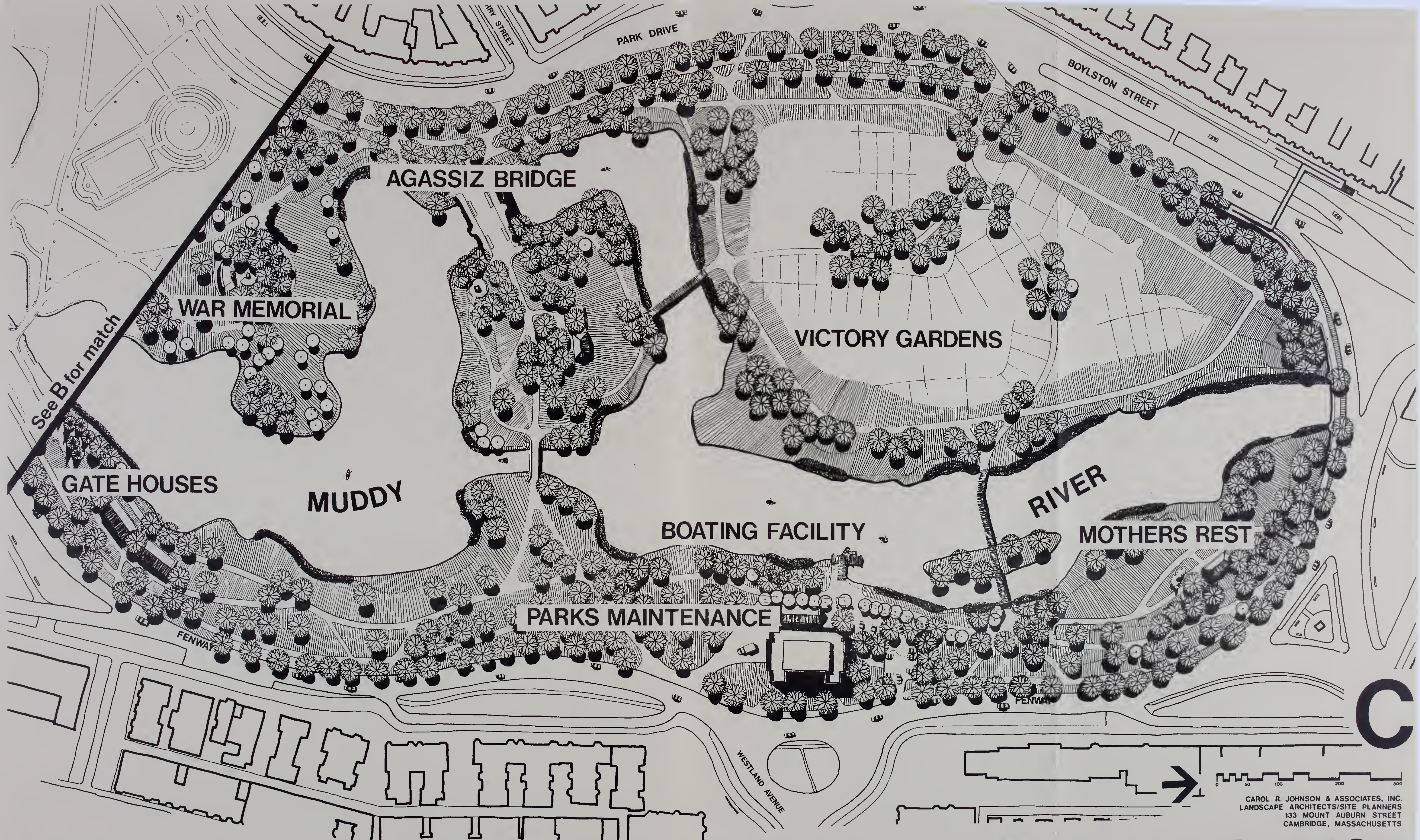

CAROL R. JOHNSON & ASSOCIATES, INC.
LANDSCAPE ARCHITECTS/SITE PLANNERS
133 MOUNT AUBURN STREET
CAMBRIDGE, MASSACHUSETTS

BACK BAY FENS RESTORATION

prepared for CITY OF BOSTON PUBLIC FACILITIES DEPARTMENT

COSTS & DETAILS

COSTS

The following estimated 1977 costs for construction of the proposed Back Bay Fens Preservation Master Plan are $3,812,840. This figure includes construction costs for work under the jurisdiction of both the City of Boston and the Metropolitan District Commission. Concerning the estimated construction cost figure, it does not represent a total project budget which would include figures for site survey, testing, design and on-site construction inspection.

Assuming that it would not be possible to begin construction until 1978, a cost escalation factor should be included in the estimate. An annual escalation of 10% is typically expected. Therefore, the total cost for construction in 1978 would be $3,812,840 plus $381,284,012 or $4,194,124.

Costs are calculated for midyear 1977 and also for 1978 using the escalation percentage. Incremental projects phased over a longer period of time would, of course, require a greater total budget. Also, unit costs over time are apt to change substantially.

The cost estimate is separated into three categories: costs associated with improvements on parkland within the jurisdiction of the City of Boston, costs associated with improvements on Metropolitan District Commission lands, and the costs of constructing improvements at the Sears and Roebuck parking lot. Additional considerations are as follows:

1) The estimate does not include costs for relocating sewage and storm water conduits under Higginson Circle, Brookline Avenue, and Sears parking lot fill areas.

2) The engineering design and construction costs for major street bridge construction/restoration are not included in the estimate.

3) All costs shown represent estimated bids to the City of Boston or Metropolitan District Commission. Included in each cost item is material, labor, subcontractor overhead and profit, 15% general overhead and profit, and a 10% contingency factor.

4) Park entry point cost figures appear in both the City of Boston and the Metropolitan District Commission estimates tables. In a majority of cases the jurisdictional boundary line passes through an entry area thus dividing cost allocation.

TABLE 1. CITY OF BOSTON/COST SUMMARY

Back Bay Fens Preservation Master Plan

Parkwide Costs	Item Total	Total
General Upgrading & Planting:		
Clear, grub, plant, shoreline treatment	$256,970	
Fill, loam & sod at Victory Garden	24,760	
Mother's Rest	33,420	
Simmons College	34,850	
Agassiz Park	9,530	$359,530
Stone Dust Paths:		
New construction	10,300	
Restoration of existing (includes lower Fenway path)	85,540	95,840
Bituminous Concrete Walks:		
New construction		31,490
Lighting (includes walkway and parking lot lights)		145,480
Trash Containers and Waste Center Sites		
Victory Garden waste centers (4)	4,180	
Trash receptacles (43)	4,850	9,030
Benches (84)		79,540

Specific Site Improvements		Item Total	Total
Excavation:			
Agassiz Island formation (channel)		$25,920	
Higginson Circle		174,960	
Brookline Avenue		81,850	$282,730
Bridge Construction – Stone Bridges:			
Evans Way Bridge		262,300	
South Museum Bridge (missing bridge)		193,270	
Rose Garden Bridge (opposite Forsyth Way)		193,270	
Agassiz Island Bridge		165,660	814,500
Bridge Construction – Wooden Bridges:			
Mother's Rest (Long) Bridge		189,000	
Agassiz/Victory Garden Bridge		95,760	
Emmanuel College Bridge		79,800	364,560
Bituminous Concrete Parking Lots:			
Improvements @ Fire Control Center		17,880	
Field House lot (including granite setts and stone wall)		94,730	112,610
Entry Points			
Higginson Circle (east entry)		13,910	
Gardner Museum		40,650	
Evans Way Entry		18,150	
Fine Arts Museum Entry		24,190	
Jersey Street Entry	(MDC)		
Rose Garden (opposite Forsyth Way)		2,160	
Victory Garden Entry	(MDC)		
Mother's Rest Bridge Node		37,000	
Mother's Rest Stairway		37,540	173,600

		Item Total	Total
Island at Mother's Rest			$10,700
Canoe Dock			92,630
Rose Garden Maintenance Building			29,340
Agassiz Bridge Area	(including stairways, removal of road-surface, pavements, seats, monument improvements)		111,540
Athletic Field	(including seat improvements, turf restoration, stairway)		245,290
Basketball Courts	(including removal of existing and reconstruction at new site, benches, bleachers, lights)		87,140
Children's Play Area	(including fill & sodding site, new equipment, benches, stone wall)		45,130
			$3,090,680

TABLE 2. CITY OF BOSTON/COST SUMMARY

Back Bay Fens Preservation Master Plan

Sears Parking Lot	Item Total	Total
Excavation	$81,050	
Turf establishment, tree planting	46,150	$127,200
		$127,200

TABLE 3. METROPOLITAN DISTRICT COMMISSION/COST SUMMARY

Back Bay Fens Preservation Master Plan

		Item Total	Total
Perimeter Improvements			
Remove and reset Fenway curbing		$80,060	
Park Drive improvements		140,660	
Turf rehabilitation		139,440	
Tree planting and rehabilitation		47,250	
Bituminous concrete walk		111,350	$518,760
Entry Points:			
Higginson Circle (East entry)		2,710	
Gardner Museum	(City of Boston)		
Evans Way Entry		5,550	
Fine Arts Museum		20,390	
Jersey Street Entry		5,140	
Rose Garden Entry	(City of Boston)		
Victory Garden Entry		5,860	
Mother's Rest Bridge Node	(City of Boston)		
Mother's Rest Stairway	(City of Boston)		39,540
Agassiz Bridge (pavement alterations)			36,660
			$594,960

PROPOSED FIRST CONSTRUCTION PHASE

The first phase of construction is proposed to be the parkwide upgrading of vegetation and planting of the Back Bay Fens. A breakdown of phase elements is as follows:

TABLE 4. CITY OF BOSTON/FIRST PHASE COSTS*

Back Bay Fens Preservation Master Plan

General Clearing, Grubbing, Planting, Fill Loam, Sodding	Quantity	Unit	Price	Item Total	Total Cost
Planting:					
Shade Trees	248	Ea.	$450	$111,600	
Flowering Trees	62	Ea.	200	12,400	
Conifers	11	Ea.	450	4,950	
Lowgrowing Material	86	Ea.	50	4,300	
Water Edge Plants	2,600	Ea.	8	20,800	$154,050
Clear, Grubbing, Brush out	21.5	A.	1,500		32,250
Removal:					
Hawthornes (M.F.A. lawn)	25	Ea.	100	2,500	
Phragmites Areas (cut & remove tops)	40,400	SF	.10	4,040	6,540
Transplanting (Taxus at War Memorial)	25	Ea.	75		1,880
Tree Pruning:					
Large	376	Ea.	100	37,600	
Small	112	Ea.	50	5,600	43,200
Shore Treatment (excavate Phragmites roots)	2,721	CY	7.00		19,050
Fill, Loam & Sod:					
Victory Garden Park					
Fill	1,890	CY	5.00	9,450	
Grade	2,710	SY	.65	1,760	
Loam & Sod	2,710	SY	5.00	13,550	24,760

	Quantity	Unit	Price	Item Total	Total Cost
Mother's Rest					
Fill	1,090	CY	5.00	5,450	
Grade	4,950	SY	.65	3,220	
Loam & Sod	4,950	SY	5.00	24,750	33,420
Simmons College Area					
Fill	570	CY	5.00	2,850	
Grade	1,700	SY	.65	1,100	
Loam & Sod	6,180	SY	5.00	30,900	34,850
					$ 350,000.00

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*Midyear 1977 cost estimate

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Nakano, Kunichi. MAPC-BRA Olmsted Park System Inventory Report, Structural Analysis, Metropolitan Area Planning Council, Boston, Massachusetts, 1973.

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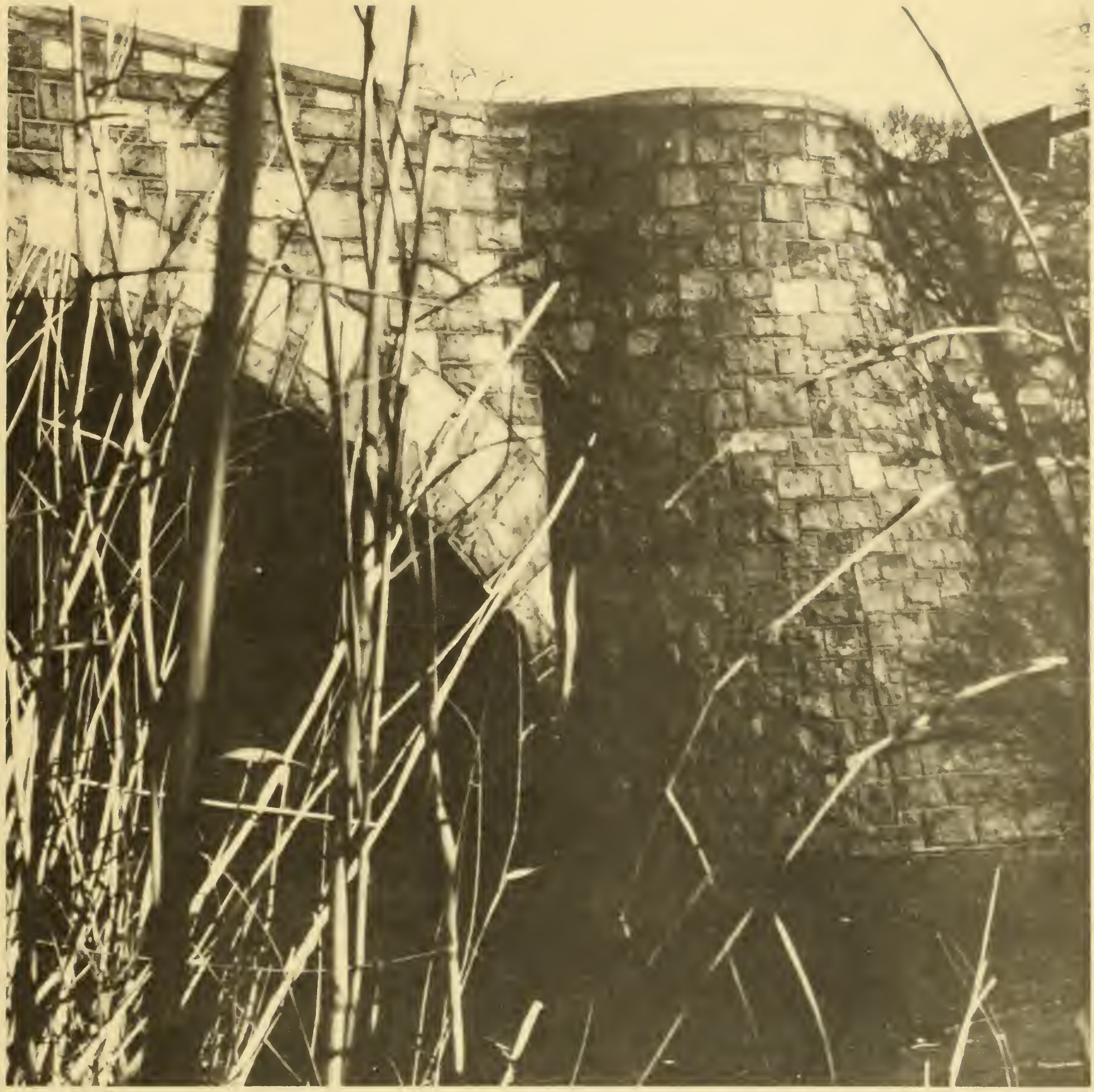
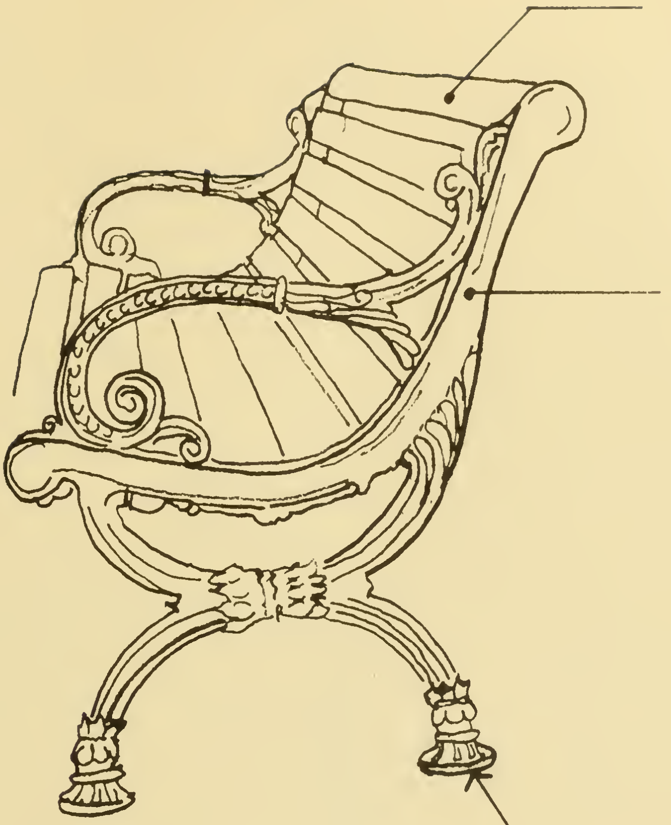
DESIGN DETAILS



Richardson Bridge - Example of stonework proposed to be duplicated in new walls and bridges throughout the Fens.



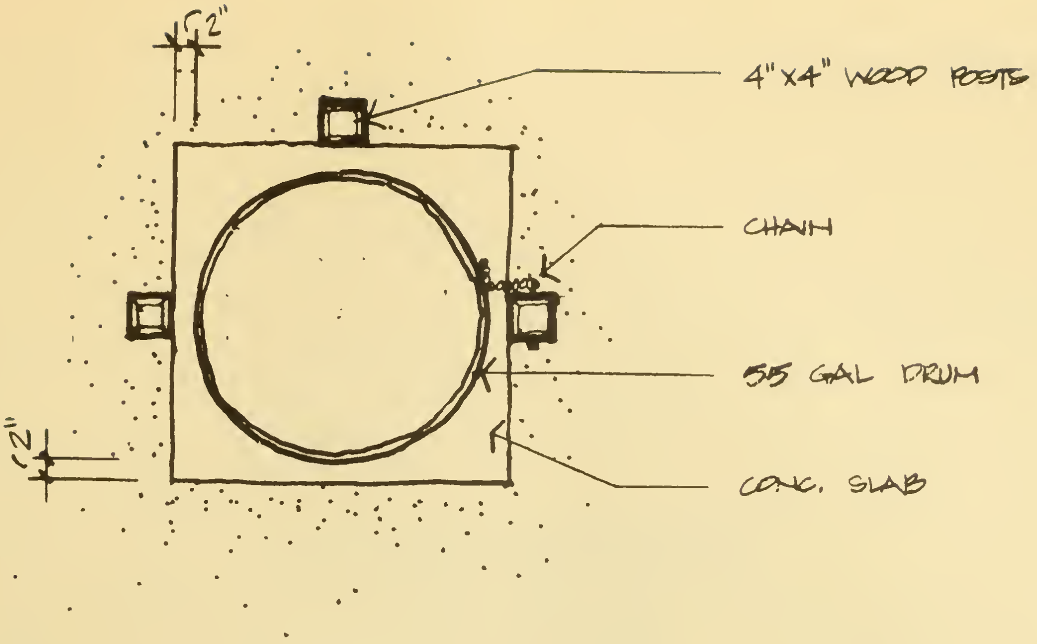
WOOD SLATS (PURPLEHEART)

CAST IRON FRAME

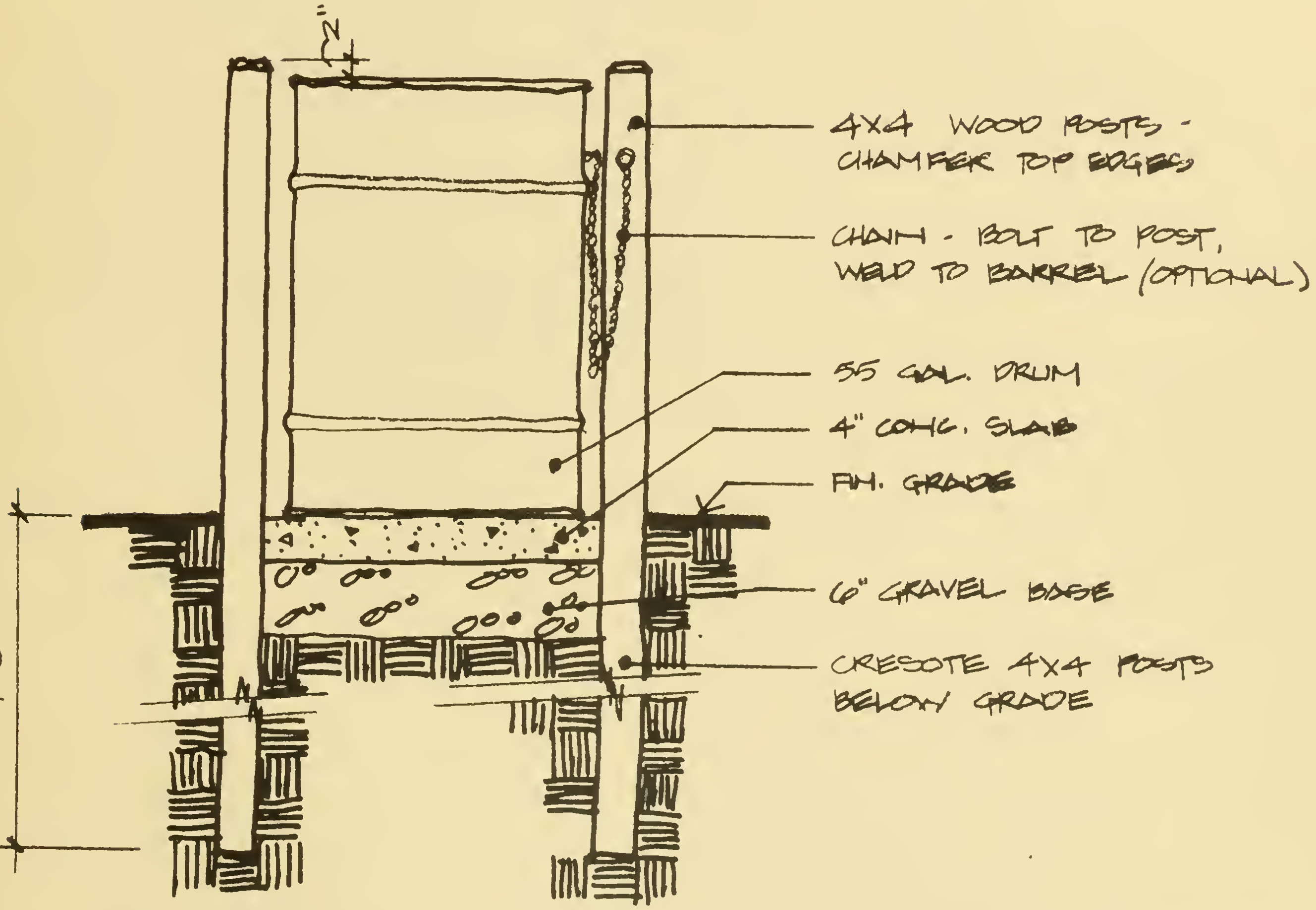
CASTING EXTENDED BELOW GRADE, ANCHORED IN CONCRETE

BENCH DETAIL *

* SKETCH TAKEN FROM BENCH NO. 3378, KENNETH LYNCH & SONS, WILTON, CONN.



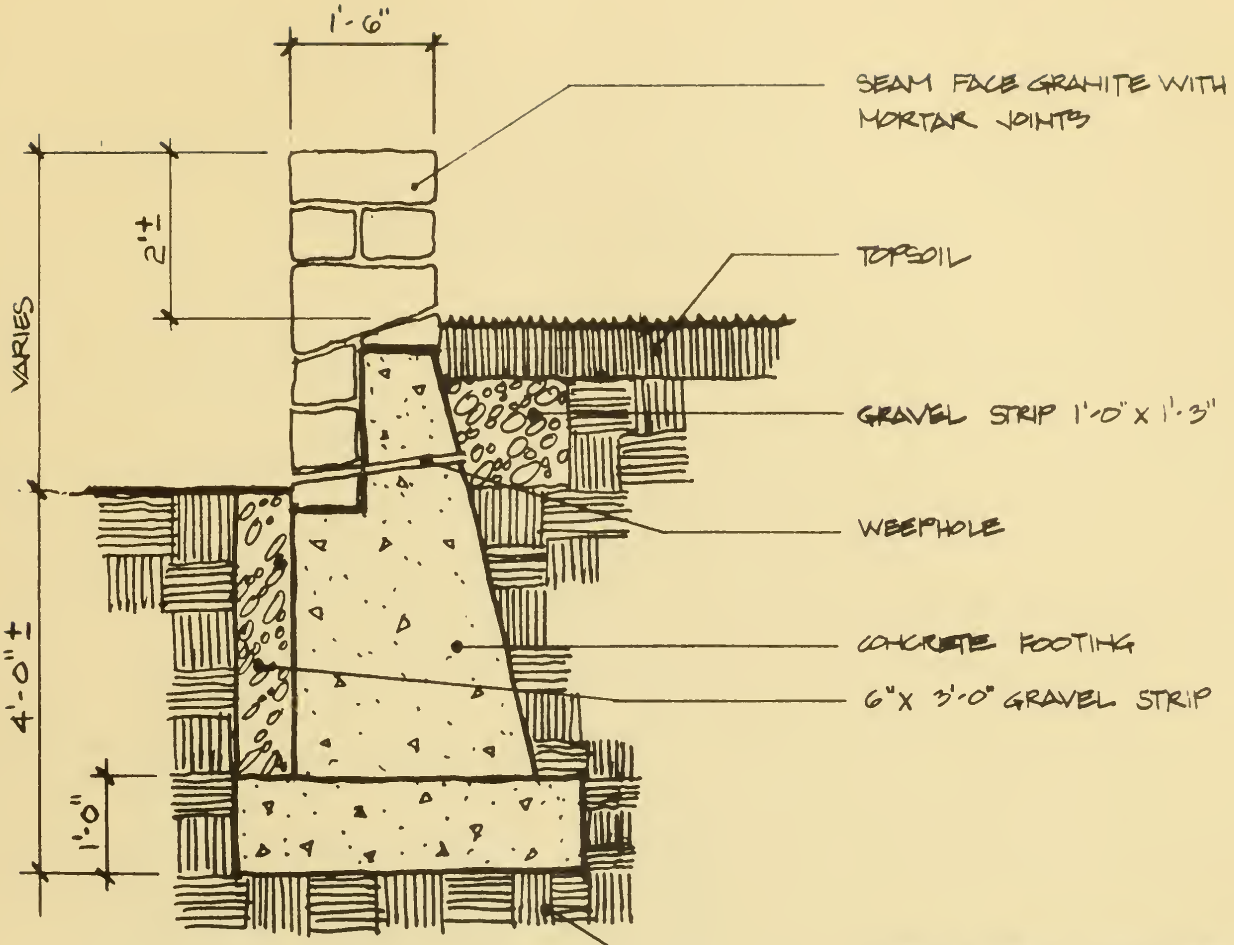
PLAN


2"
4x4 WOOD POSTS - CHAMFER TOP EDGES
CHAIN - BOLT TO POST, WELD TO BARREL (OPTIONAL)
55 GAL. DRUM
4" CONC. SLAB
FIN. GRADE
6" GRAVEL BASE
CRESOTE 4x4 POSTS BELOW GRADE
4'-0"

SECTION

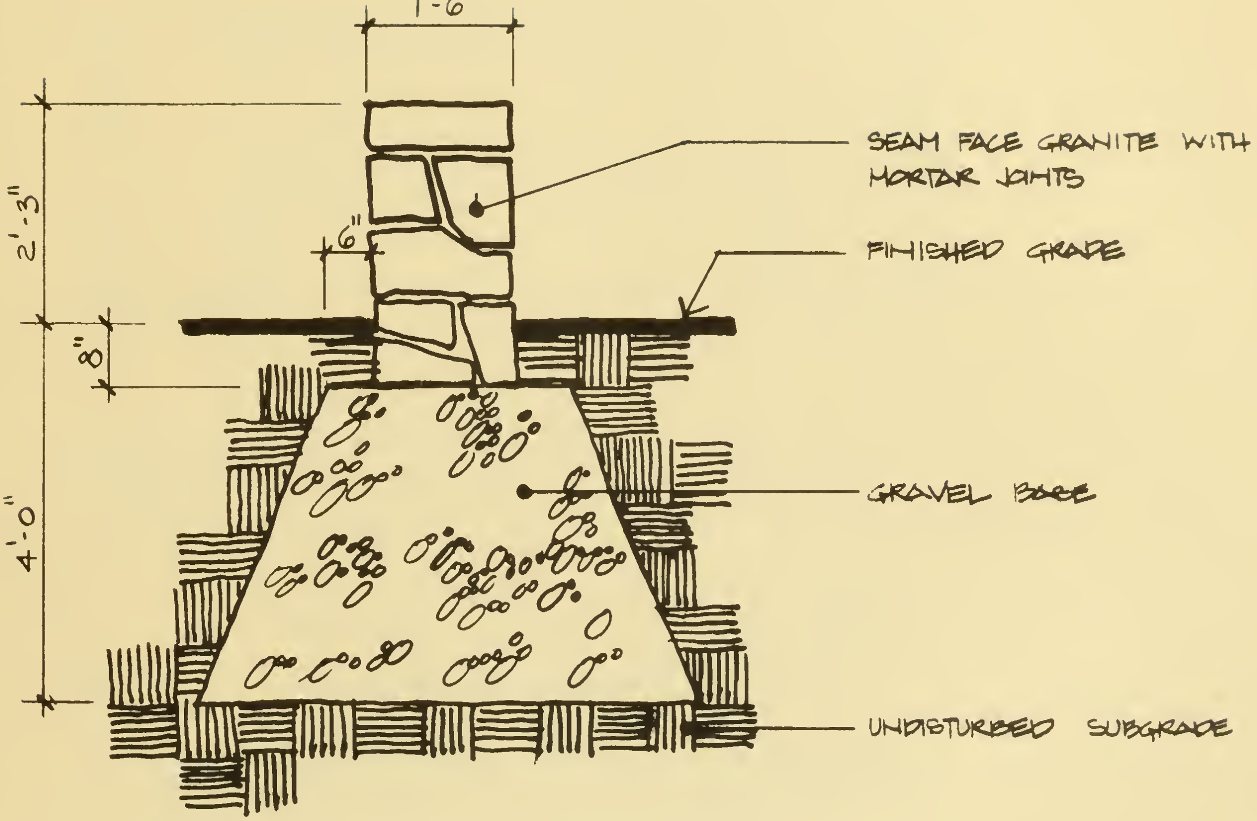
TRASH RECEPTACLE DETAIL

SCALE: 3/4"=1'-0"



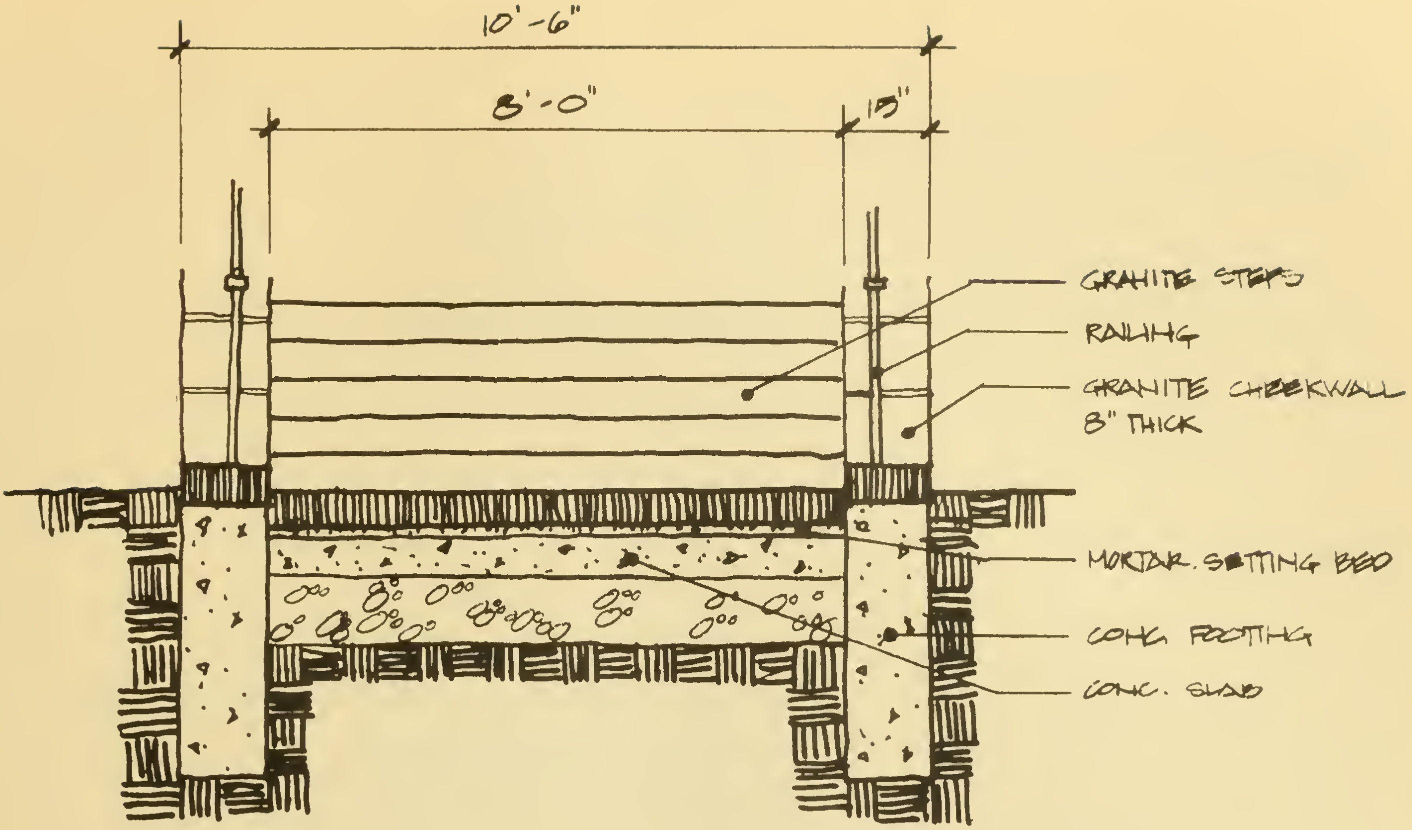
RETAINING WALL DETAIL

SCALE: 1/2"=1'-0"



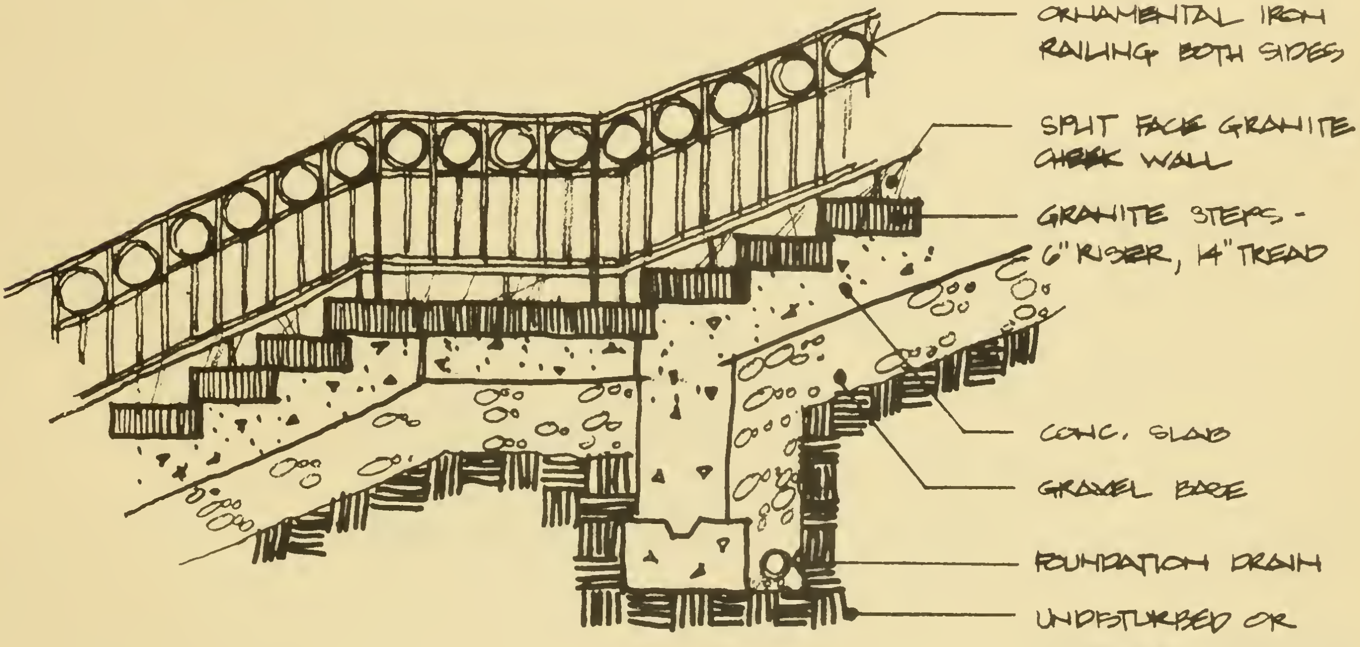
SITTING WALL DETAIL

SCALE: 1/2" = 1'-0"



SECTION / FRONT ELEVATION

SCALE: 3/8" = 1'-0"

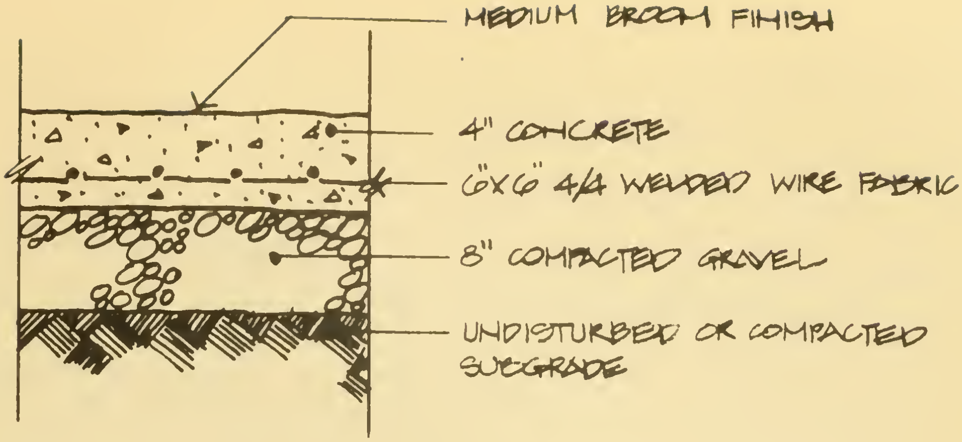

ORNAMENTAL IRON RAILING BOTH SIDES
SPLIT FACE GRANITE CHEEK WALL
GRANITE STEPS - 6" RISER, 14" TREAD
CONC. SLAB
GRAVEL BASE
FOUNDATION DRAIN
UNDISTURBED OR COMPACTED SUBGRADE

SECTION

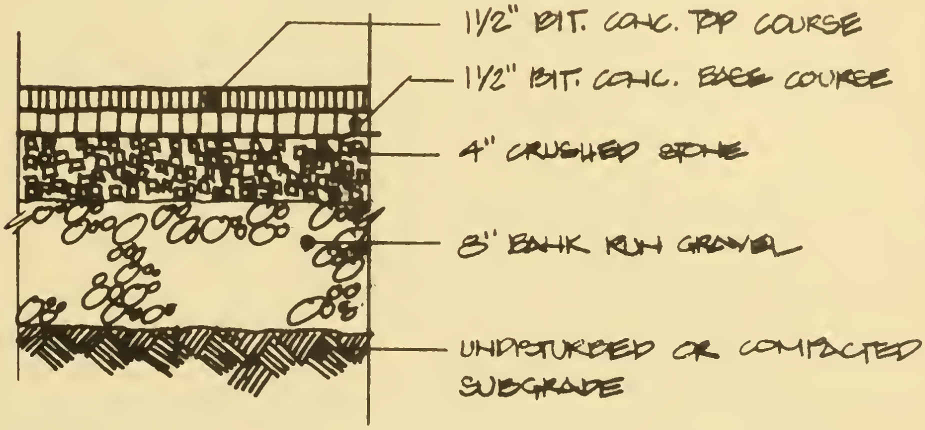
SCALE: 3/8" = 1'-0"

MOTHER'S REST STAIRWAY

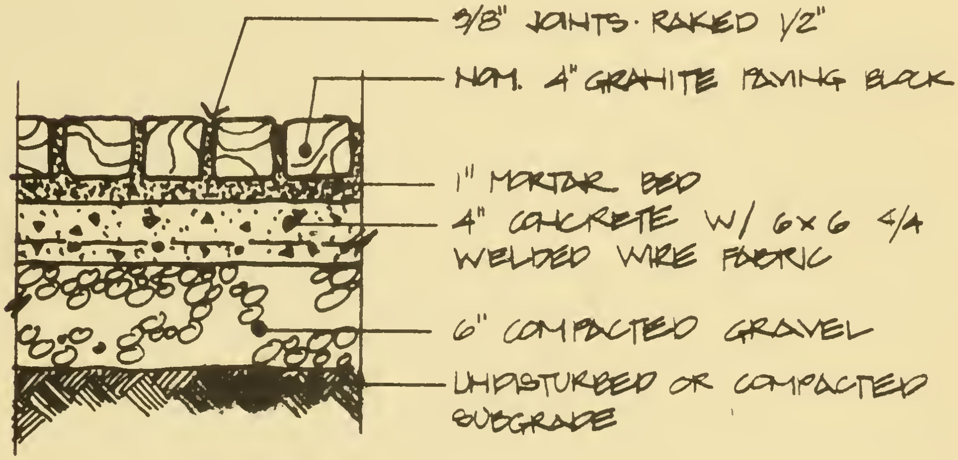
CONCRETE PAVING SLAB


MEDIUM BROOM FINISH
4" CONCRETE
6"x6" 4/4 WELDED WIRE FABRIC
8" COMPACTED GRAVEL
UNDISTURBED OR COMPACTED SUBGRADE

BITUMINOUS CONC. PAVEMENT

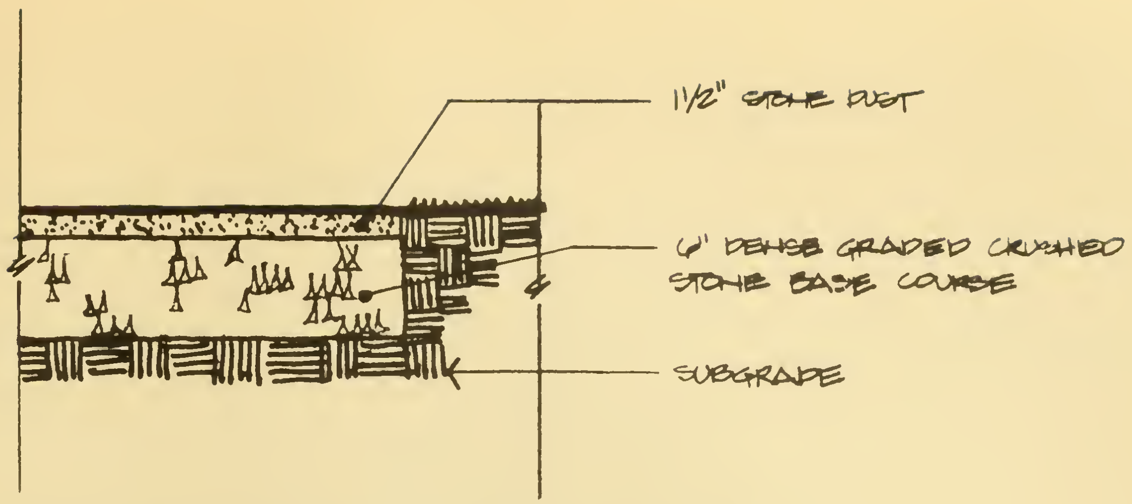

1 1/2" BIT. CONC. TOP COURSE
1 1/2" BIT. CONC. BASE COURSE
4" CRUSHED STONE
8" BANK RUN GRAVEL
UNDISTURBED OR COMPACTED SUBGRADE

GRANITE SETS ON CONCRETE


3/8" JOINTS · RAKED 1/2"
NOM. 4" GRANITE PAVING BLOCK
1" MORTAR BED
4" CONCRETE W/ 6x6 4/4 WELDED WIRE FABRIC
6" COMPACTED GRAVEL
UNDISTURBED OR COMPACTED SUBGRADE

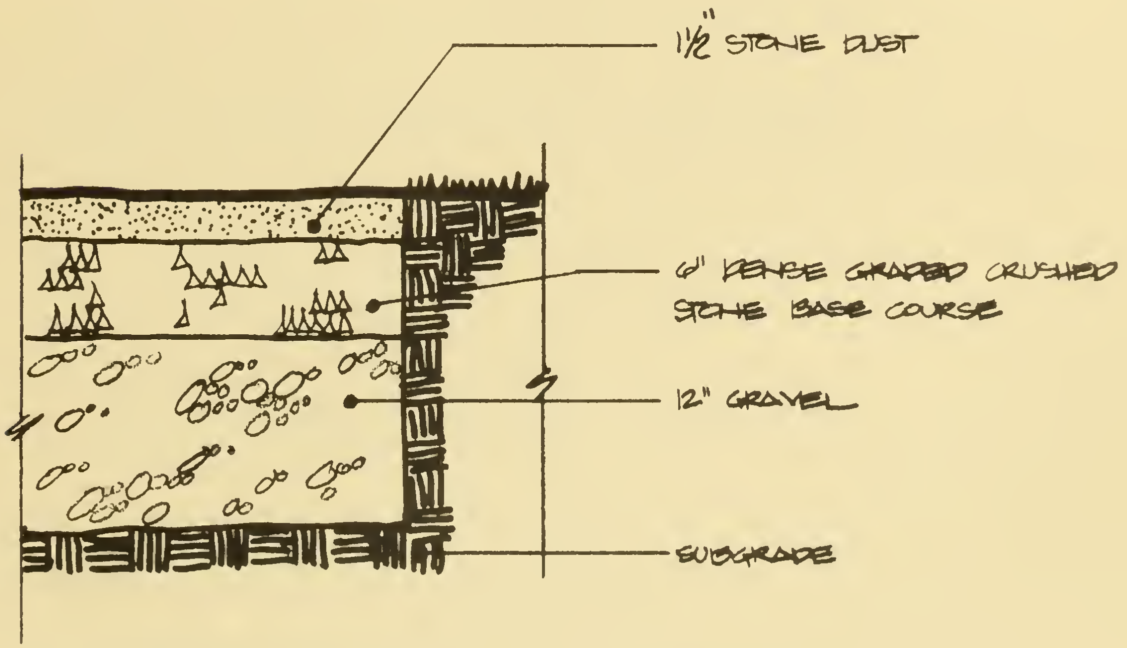
PAVING DETAILS

SCALE: 1"=1'-0"



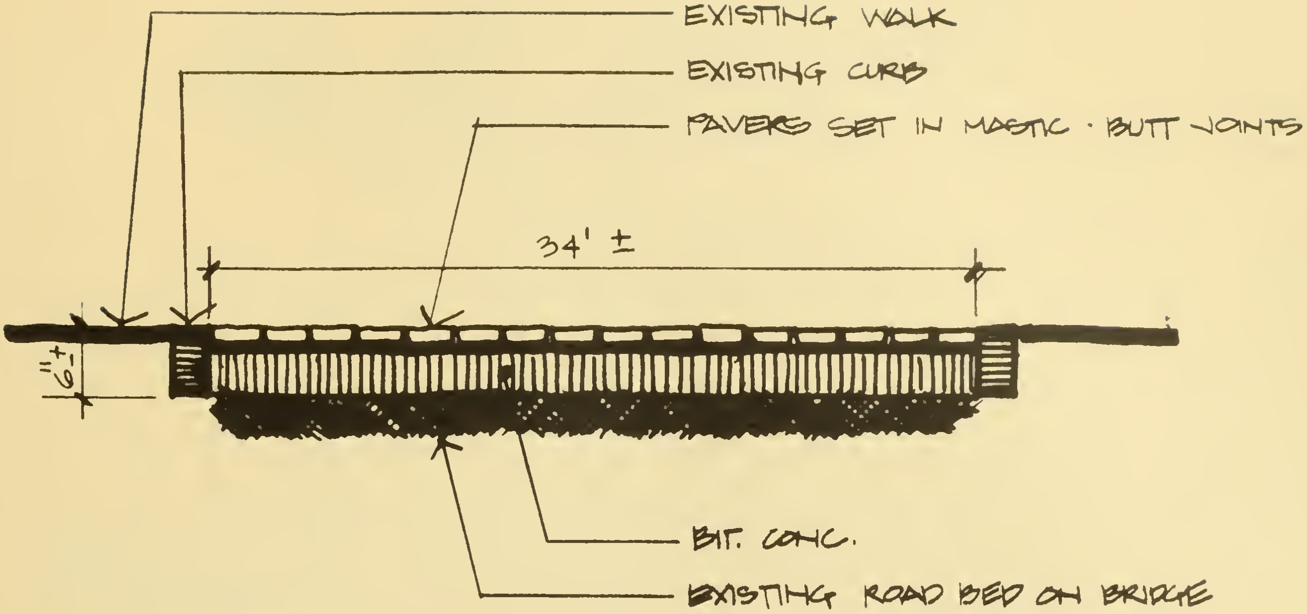
RESTORATION OF EXISTING STONE DUST WALKS

SCALE: 1"=1'-0"



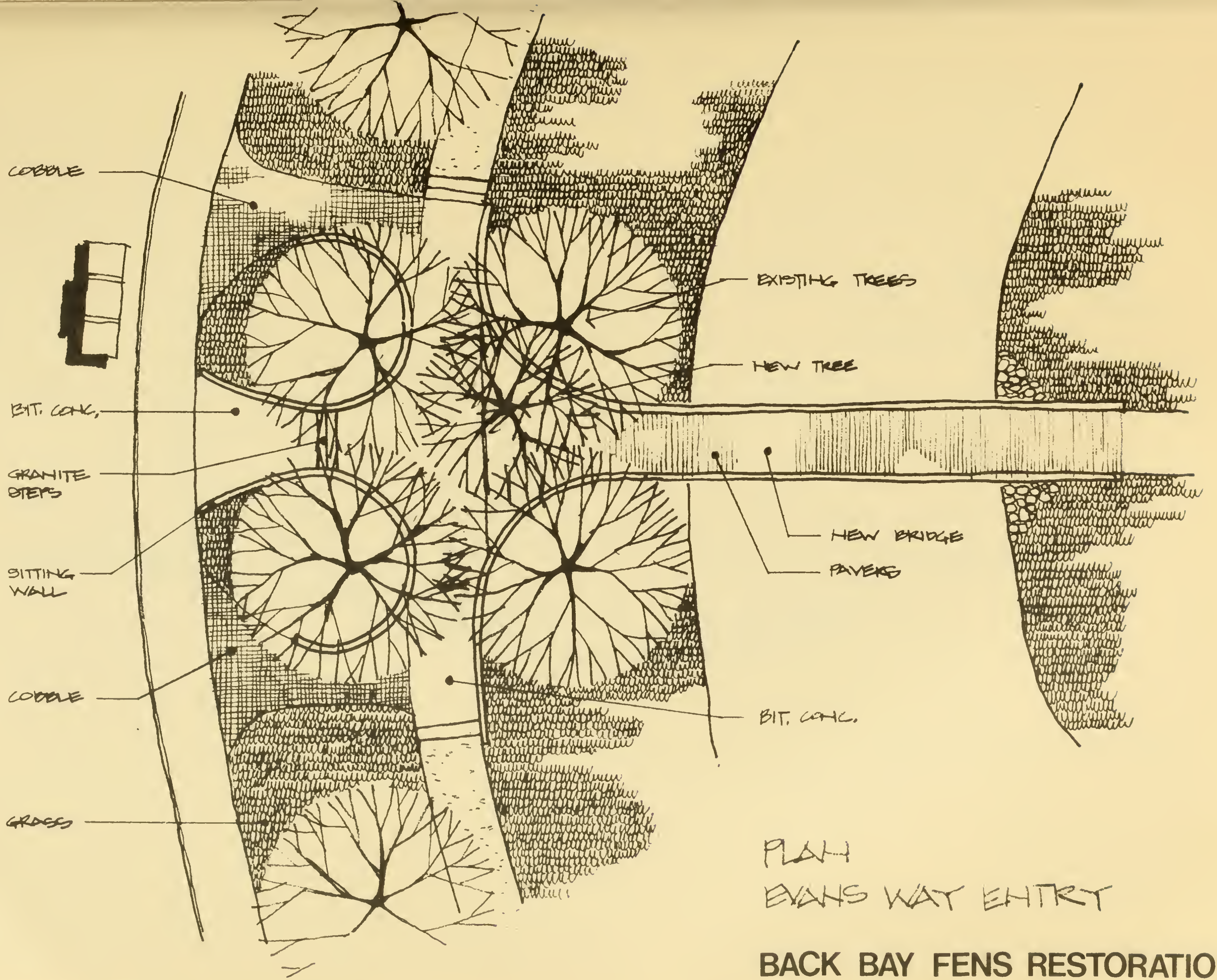
NEW STONE DUST WALKS

SCALE: 1"= 1'-0"


EXISTING WALK
EXISTING CURB
PAVERS SET IN MASTIC · BUTT JOINTS
34' ±
6" ±
BIT. CONC.
EXISTING ROAD BED ON BRIDGE

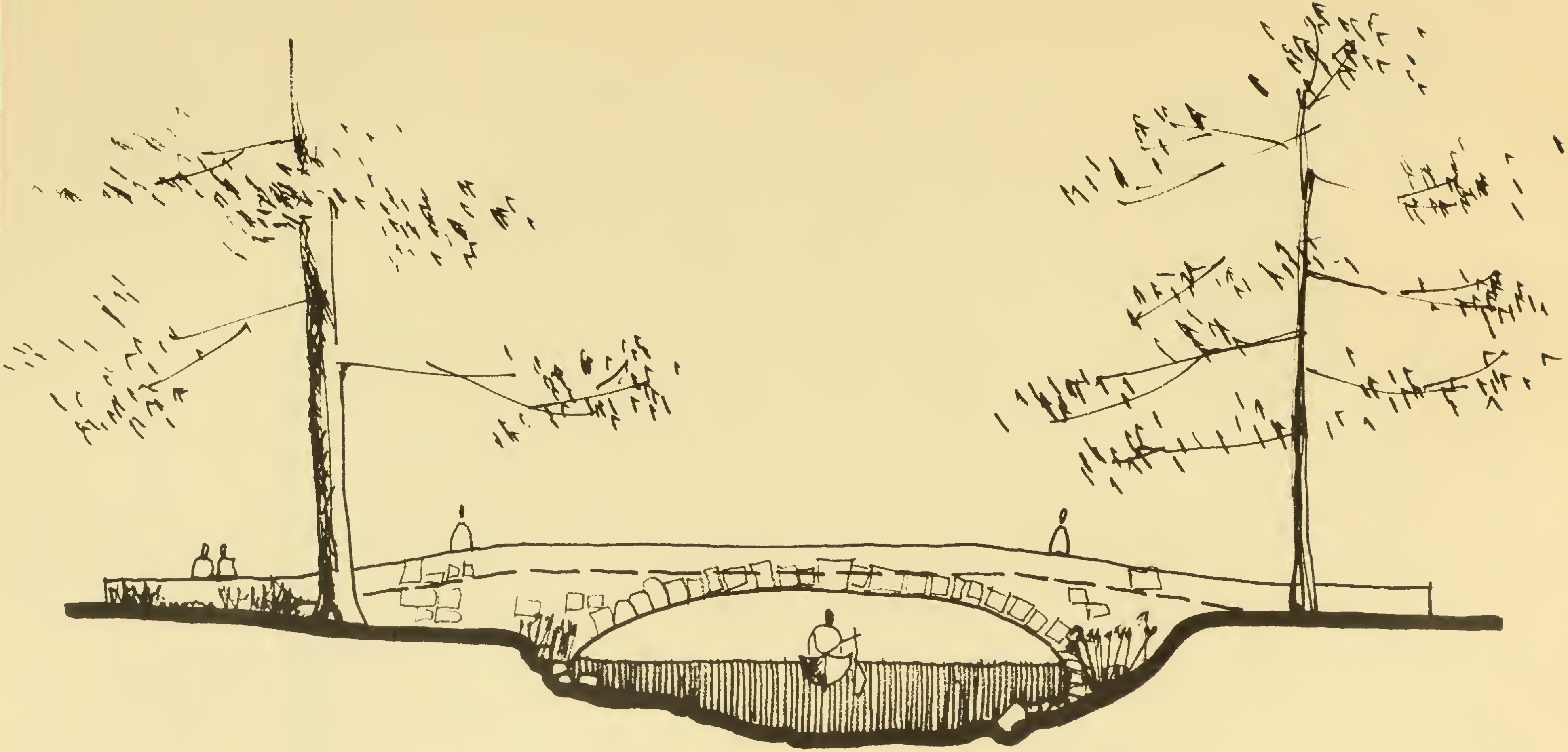
PAVING ON AGASSIZ BRIDGE

NO SCALE

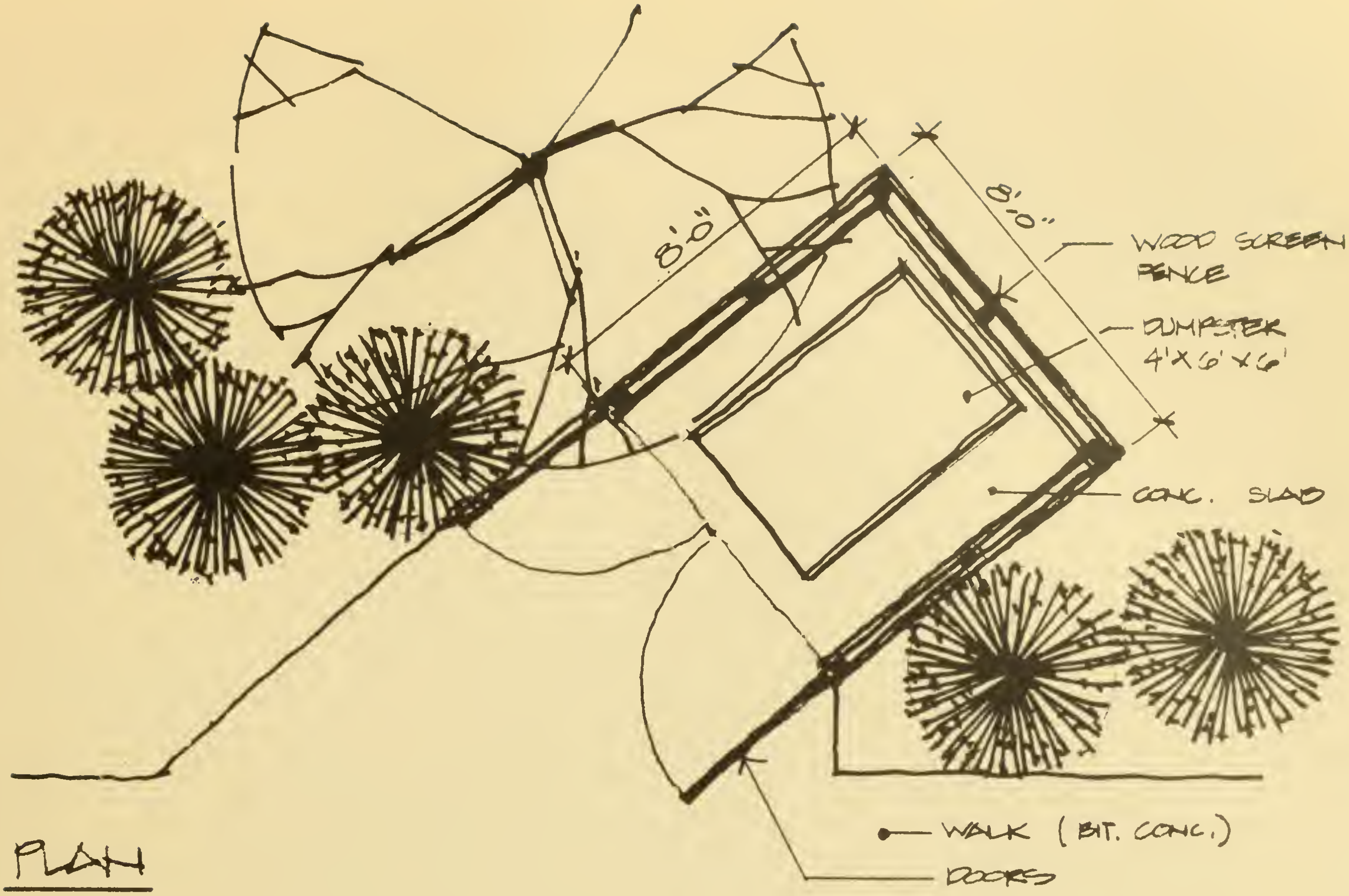


PLAN
EVANS WAY ENTRY

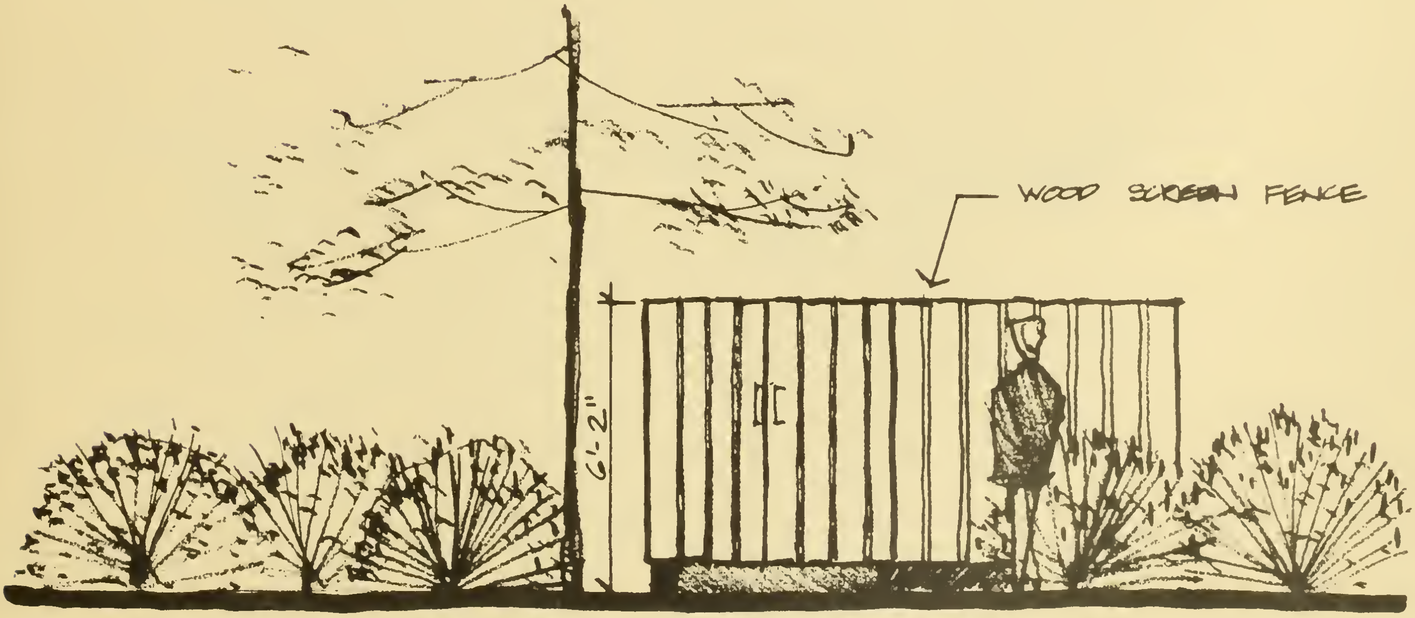
BACK BAY FENS RESTORATION



EVANS WAY ENTRY BRIDGE
SCALE: 1":60'



PLAN



ELEVATION

TRASH STATION DETAIL - VICTORY GARDENS

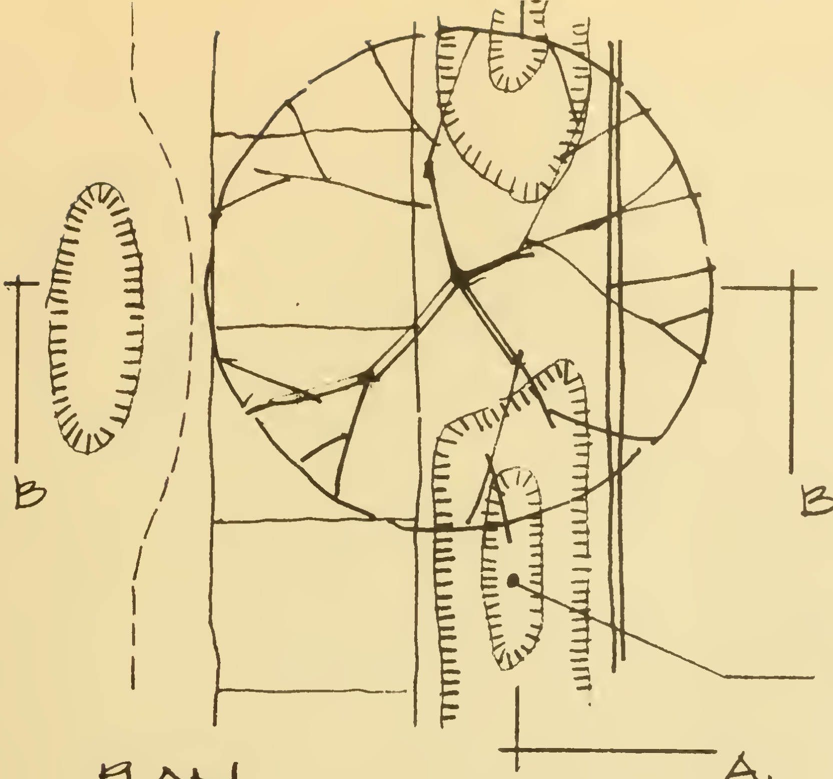
SCALE: 1/4"=1'-0"

TREE RESTORATION

CONTROL MEASURE

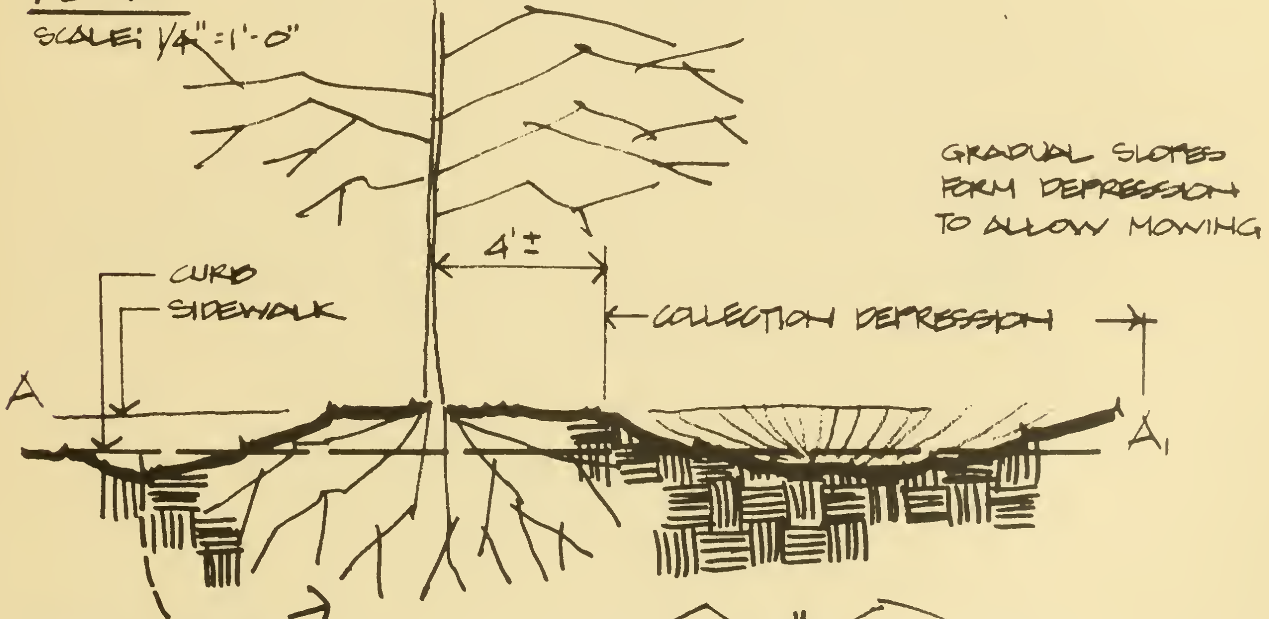
COLLECT RAINWATER & SNOWMELT IN SHALLOW DEPRESSIONS NEAR ROOT AREA; WATER PERCOLATES TO ROOT ZONE.

CONDUCT REGULAR FEEDING PROGRAM.



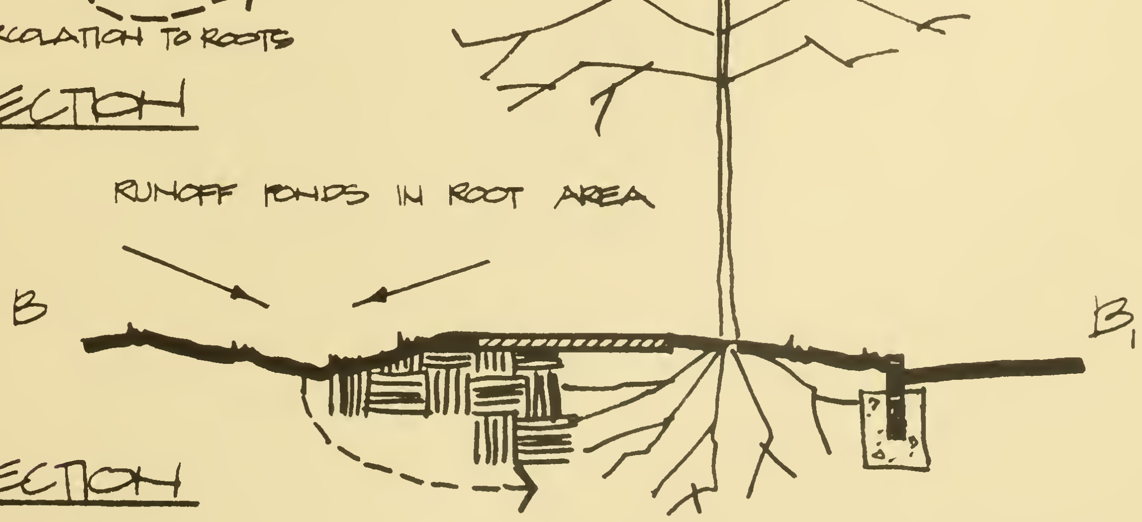
PLAN

SCALE: 1/4"=1'-0"

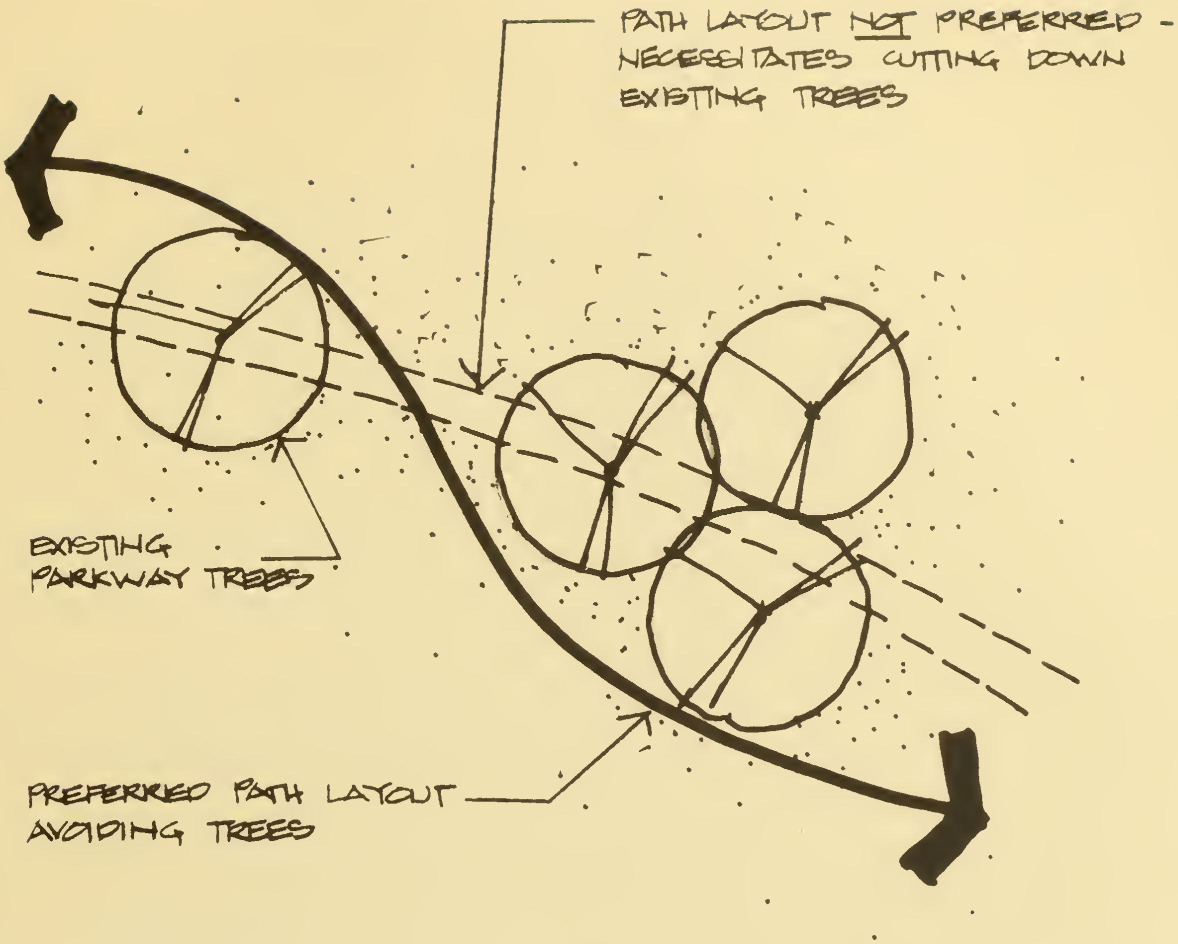


PERCOLATION TO ROOTS

SECTION

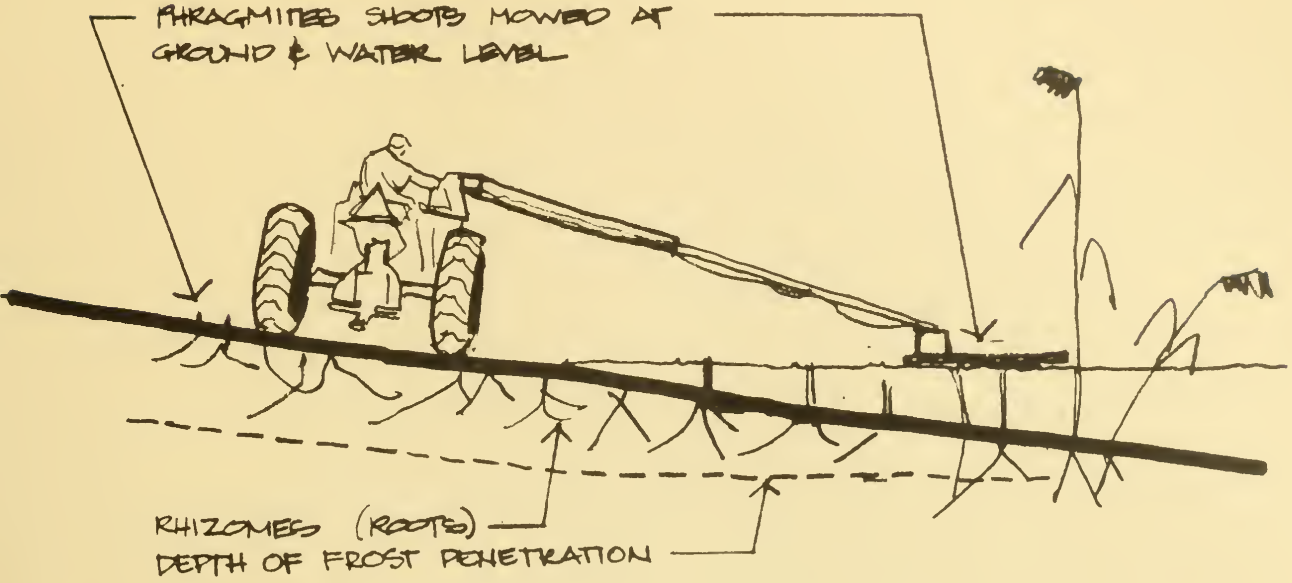


SECTION

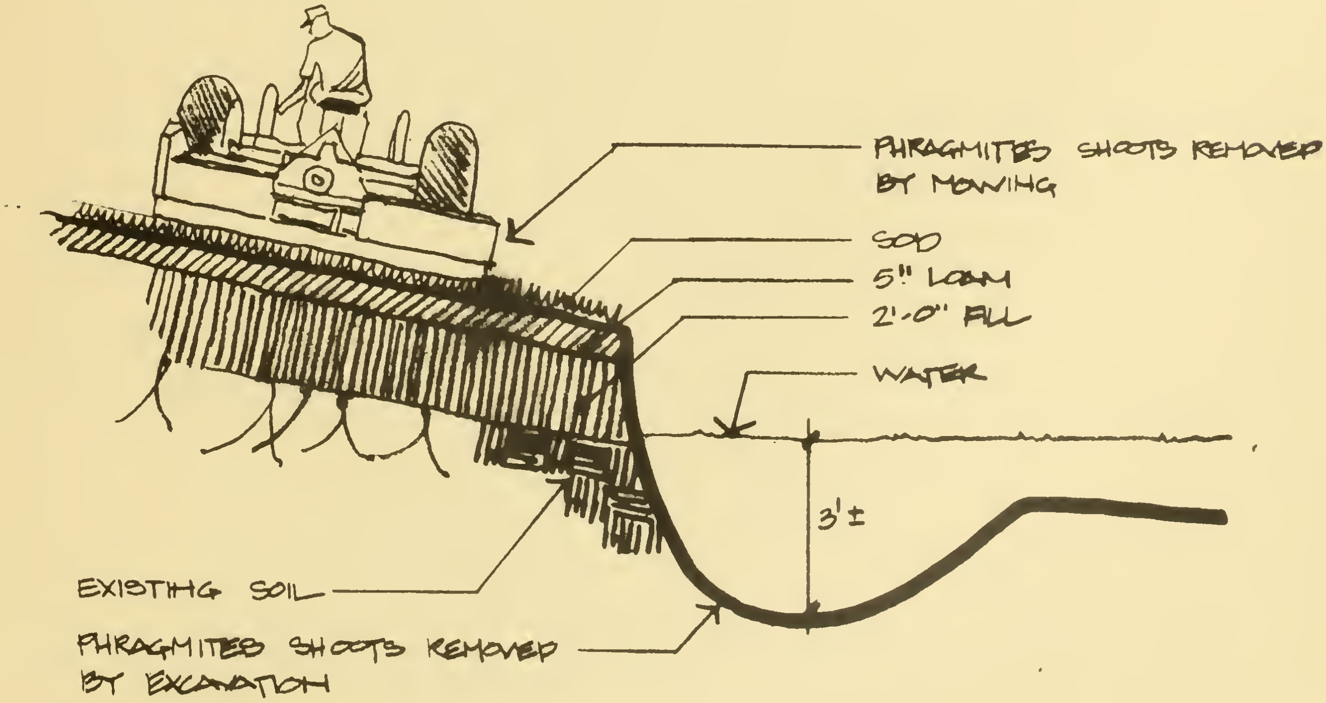

PATH LAYOUT NOT PREFERRED - NECESSITATES CUTTING DOWN EXISTING TREES
EXISTING PARKWAY TREES
PREFERRED PATH LAYOUT AVOIDING TREES

PATH LAYOUT DETAIL

NOTE: PLANTS CUT IN JUNE & OCTOBER - TOPS REMOVED TO ENCOURAGE DEEP FREEZING


PHRAGMITES SHOOTS MOWED AT GROUND & WATER LEVEL
RHIZOMES (ROOTS)
DEPTH OF FROST PENETRATION

CONTROL BY MOWING


PHRAGMITES SHOOTS REMOVED BY MOWING
SOD
5" LOAM
2'-0" FILL
WATER
3' ±
EXISTING SOIL
PHRAGMITES SHOOTS REMOVED BY EXCAVATION

CONTROL BY EXCAVATION & MOWING

PHRAGMITES REMOVAL

BIBLIOGRAPHY

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APPENDICES

APPENDIX A

CABLE ADDRESS CEMI

CE MAGUIRE, INC.
ARCHITECTS · ENGINEERS · PLANNERS

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PLEASE REPLY TO: Waltham, Massachusetts

June 26, 1973
CEM No. 1853.10

Mr. Thomas C. McMahon, Director
Massachusetts Division of Water Pollution Control
Water Resources Commission
100 Cambridge Street
Boston, Massachusetts 02202

Re: Water Quality Improvement of the Boston Back Bay Fens
MDWPC #72-06

Dear Mr. McMahon:

We are pleased to submit herewith our comprehensive report for "Water Quality Improvement of the Boston Back Bay Fens". This report presents the results of our study as set forth by the terms of our contract dated May 1, 1972 with the Massachusetts Division of Water Pollution Control. These results, accompanied with our recommendations and appropriate cost estimates, are presented in detail within the text of the report. A summary of the report is presented below:

SUMMARY

Back Bay Fens Water Quality History

The Back Bay Fens is located within the City of Boston and consists of park areas, ball fields, gardens, roadways, recreational walkways, and the Back Bay Fens Pond. The Fens Pond system is a body of water which extends from Brookline Avenue to the Charles River Basin. It is bordered by Park Drive and Charlesgate West, on its westerly shore, and by the Fenway and Charlesgate East, on its easterly shore.

The Fens Pond area has been subject to criticism for its polluted condition prior to the 1820's when it was known as the Full Basin. During this time period, the Full Basin was a tidal estuary into which flowed fresh water from Muddy River and Stony Brook. Stony Brook was an open channel containing direct sewer connections from the Boston residents living near its water course.

As the City grew, Stony Brook and Muddy River became more polluted and degraded the Full Basin to a greater degree. Just prior to the turn of the century, the City of Boston constructed the Foul Flow Channels and the Muddy River Conduit (following plans formulated by Frederic L. Olmsted) to divert all fresh water flows, except during heavy storms, from the Full Basin. Tidal action was still present and, to a degree, the Full Basin was tolerable.

The construction of the Charles River Dam in 1910 eliminated the tidal fluctuations and converted the Full Basin into a fresh body of water which is known as the Back Bay Fens Pond. From that time until now, over 60 years later, the major flows entering the Fens Pond area have consisted of combined wastewater overflows from the Stony Brook Sewer System, small amounts of dry and wet weather flows from the Muddy River, plus discharges from local surface drainage systems.

In order to evaluate the water and benthal deposit quality of the Fens Pond a sampling and analysis program was conducted during our study. Records of previous sampling programs could not be found to illustrate the water and sludge quality conditions of the past. Our results and analysis data are presented in detail within the report, and there is no doubt that the environmental quality of the Fens Pond system is extremely poor and is useless, in its present state, for any recreational purposes.

Recommended Immediate Program

The immediate recommended program presented in this report, to improve the water quality of the Back Bay Fens, consists of a number of individual modifications and additions to the present sewerage systems influencing the Fens Pond area. This program provides necessary adaptations to effectively arrest the degradation due to combined wastewater overflows and create an equilibrium condition within the Fens Pond.

Our recommended program for immediate action can be divided into the following four categories:

A. Modify the Stony Brook Sewerage System and appurtenant structures to reduce the quantity of sanitary wastewater discharging into the Stony Brook Conduit during dry weather flow conditions plus decrease the sanitary wastewater components in the combined wastewater flows which are discharged to the Back Bay Fens Pond during storm flow conditions.

B. Modify the present mode of operation and control of the overflow system at Boston Fens Gate House No. 1 for obtaining more efficient overflow sluice gate control, increasing gross solids removal, and reducing the quantity of sludge discharges.

C. Provide in-stream treatment, within the Fens Pond, to hydraulically dredge settled sludge and install aeration to increase dissolved oxygen concentrations for improving the water quality of the Back Bay Fens.

D. Augment dry weather flow through the Fens Pond with fresh clean water to eliminate the detrimental affects of the presently stagnant body of water throughout the Pond.

The following is a summary of our immediate recommended construction program for achieving the goals set forth in the above categories:

(1) Rehabilitate approximately 13 malfunctioning overflows to limit the discharge of dry weather sanitary wastewater flows to the Stony Brook Conduit.

(2) Provide a sluice gate diversion chamber and instrumentation to divert the dry weather sanitary flows in the Old Stony Brook Double Channels to the Boston Main Drainage Relief Sewer for eventual conveyance to the Deer Island Sewage Treatment Plant. In addition, provide instrumentation in the Ward Street Headworks for controlling the flow diversion.

(3) Provide a sluice gate diversion chamber and instrumentation to divert the dry weather sanitary flows in the Stony Brook Conduit to the Boston Main Drainage Relief Sewer for eventual conveyance to the Deer Island Sewage Treatment Plant. In addition, provide instrumentation in the Ward Street Headworks for controlling the flow diversion.

(4) Eliminate the influence of Charles River water back-up in the Stony Brook Conduit by rehabilitating the tide gates in the MDC Fens Gate House.

(5) Provide instrumentation and controls to operate:

(a) The existing sluice gate between the 12' x 12' Foul Flow Channel and the 7' diameter Foul Flow Channel.

(b) The existing sluice gate at the point where the 7' diameter Foul Flow Channel discharges into the Boston Marginal Conduit, within the MDC Fens Gate House.

(6) Install instrumentation and automate sluice gate operation at Boston Gate House No. 1. Install two automatic, mechanically cleaned coarse bar racks plus install a sludge discharge barrier for, respectively, removing gross solids and diverting bottom debris and sludge away from the Fens Pond during periods of overflow.

(7) Hydraulically dredge existing settled sludge in the Fens Pond to a depth of 2' to 3' below the water surface. The dredge spoil is to be degritted and discharged into the Charles River Valley Sewer for eventual conveyance to the Deer Island Sewage Treatment Plant.

(8) Provide an aerobic environment in the vicinity of Boston Fens Gate House No. 1 by installing a subsurface diffused aeration system.

(9) Divert the main flow of the Muddy River through the Back Bay Fens by modifying the flow pattern through the Brookline Avenue Gate House.

(10) Rehabilitate the leaky tide gate at the discharge end of the Muddy River Conduit.

The recommendations for the immediate program have an estimated construction cost of $425,000.00 and a total project cost of $509,000.00.

Programs Considered for Future Construction

The ideal solution to the pollution problem of the Back Bay Fens, by overflow discharges of combined wastewater, is to ultimately eliminate all the wastewater from overflowing. This can be accomplished on a step by step basis or as one huge construction project, depending upon the feasibility of each project and the funding power available.

Within this report, we have analyzed previously recommended methods of accomplishing this from other reports, plus programs which we have developed. These can be grouped into the following five general categories:

(1) Upstream flow diversion

(2) Downstream flow diversion near MDC Fens Gate House

(3) Additional dredging and increased fresh water circulation through Fens Pond

(4) Instream chlorination upstream of Boston Gate House No. 1 activated during overflow storm periods

(5) Overflow detention and chlorination station at Boston Gate House No. 1

Recommended Future Program

At present, the Metropolitan District Commission is expanding their wastewater treatment and collection systems, and a report is presently being prepared to recommend system improvements to the year 2050. The effects of the Charles River Estuary Facility will not be known until it is constructed and in operation. Based on the above, and on the capability of future programs with our recommended initial programs, we recommend a phased development of treatment programs for the Stony Brook and Muddy River Systems, with the ultimate step being an overflow detention and chlorination station at Boston Gate House No. 1. The recommended future program is as follows:

(1) Pumping Station and force main to BU Detention and Chlorination Station from MDC Fens Gate House

(2) Sluice Gate and connection of Boston Marginal Conduit to West Side Interceptor, in the vicinity of Hereford Street

(3) Additional dredging of Fens Pond plus possible flow augmentation by pumping into the Fens via a pumping station on the Muddy River Conduit

(4) Storm flow activated chlorination station located on Stony Brook Conduit

(5) Overflow detention and chlorination station at Boston Gate House No. 1

We feel that these future recommendations provide the latitude required to conform to the Metropolitan District Commission's attempts to constantly improve their system along with the City of Boston's attempts to improve, as made possible through funding ability, the Fens Pond area. These programs can be readily adapted to the recommended initial program as time and need require. Further discussion of these programs and the ones recommended as not feasible is represented within the text of this report.

ACKNOWLEDGEMENTS

We wish to express our appreciation for the cooperation extended to us during the preparation of this report to personnel of the: Massachusetts Division of Water Pollution Control; Metropolitan District Commission; City of Boston Department of Public Works; and Town of Brookline.

Very truly yours,

CE MAGUIRE, INC.

K. P. Devenis

K. P. Devenis, Vice President
Environmental Division Director

Paul R. Levine

Paul R. Levine, Project Manager
Environmental Engineering Division

KPD/PRL/emv
enclosure

APPENDIX B

Transfer of Park Roadways

The first business of the meeting was a discussion of problems incident to the transfer of Boston park roadways to the Metropolitan District Commission.

Present during this part of the meeting, in addition to the four commissio named above, were Public Works Commissioner George G. Hyland, Traffic Commissio William Arthur Reilly; Joseph O'Connor and Joseph Galliotta, Chief Engineer and Assistant Chief Engineer, respectively, of the Traffic Commission; Chief Legal Assistant William H. Kerr of the Law Department, Benjamin Fink, Chief Engineer of the Metropolitan District Commission; and Harvey Weir, Attorney for the Metropolitan District Commission.

Mr. Kerr explained the provisions of Chapter 581 of the Acts of 1956, which pertain to the transfer to the Metropolitan District Commission of certain Bosto parkways, streets and highways.

The Chairman laid before the Commission a letter proposed to be sent by the Parks and Recreation Commission to the Metropolitan District Commission, reading as follows:

"City of Boston--Parks and Recreation Department
33 Beacon Street, Boston 8, Mass.

"October 29, 1956

"Metropolitan District Commission
20 Somerset Street
Boston 8, Massachusetts

Attention: Commissioner Charles W. Greenough

Gentlemen:

This communication relates to the following public ways and parkways (or portions thereof) located in the City of Boston insofar as the same are under the care and control of the Parks and Recreation Department:-

(1) that portion of Gallivan Boulevard which lies between Morton Street and William T. Morrissey Boulevard,

(2) that portion of Morton Street which lies between Forest Hills Street and Gallivan Boulevard,

(3) the Arborway,

(4) the Jamaicaway,

(5) the Riverway,

(6) the Fenway,

(7) that portion of Park Drive which lies between Audubon Circle and Boylston Street,

(8) that portion of Boylston Street which lies between its junction with Ipswich Street near Park Drive and Hemenway Street,

(9) Charlesgate West,

(10) Charlesgate East,

(11) Agassiz Road,

(12) that portion of Centre Street which lies between Veterans of Foreign Wars Parkway and the Arborway

(13) that portion of Hyde Park Avenue which lies between Milton Street and Wolcott Square,

(14) that portion of Milton Street which lies between Hyde Park Avenue and the Neponset Valley Parkway,

(15) that portion of Perkins Street which lies between the Jamaicaway and Francis Parkman Drive,

(16) Francis Parkman Drive between Perkins Street and the Jamaicaway at Kelly Circle,

(17) Chestnut Street between Perkins Street and Riverdale Parkway Drive at the Brookline town line, and

(18) Willow Pond Road between the Jamaicaway at Fynner Street and Riverdale Parkway Drive in the town of Brookline.

"The transfer to your Commission under Chapter 581 of the Acts of 1956 of the care, control and maintenance of the public ways and parkways (or portions thereof) to which this communication relates is hereby approved as of 12:01 A.M. on Tuesday, October 30, 1956 and thereby made effective as of said hour and day pursuant to the provisions of said Chapter 581.

"For the purpose of providing continuous connection, such transfer is hereby declared to include so much of any public way or parkway intersecting the public ways and parkways (or portions thereof) to which this communication relates as lies within the sidelines thereof extended, including Commonwealth Avenue between Charlesgate East and Charlesgate West (exclusive of the bridge over the Muddy River), and including also the by-pass road between Park Drive and the Riverway.

"For the sake of definiteness, such transfer is hereby further declared to include -

(a) all roadways within the limits of the public ways and parkways (or portions thereof) to which this communication relates .

(b) all walks and paths along, and approximately level with, every such roadway, if within twenty-five feet thereof, whether or not constructed as a sidewalk, and

(c) all lands lying between such roadways or between such walks or paths and such roadways, irrespective of the size, shape or purpose thereof, but excluding all monuments and other memorials subject to the supervision of the Art Commission of the City of Boston.

"Likewise for the sake of definiteness, such transfer is hereby also declared to include all signals and other devices (except parking meters) for the control of traffic on the public ways and parkways (or portions thereof) to which this communication relates, all traffic signs thereon (whether directional or regulatory), all trees and plantings on lands herein declared

to be included in such transfer, and all street lights as well as catch basins and drains servicing the public ways and parkways (or portions thereof) to which this communication relates.

"Very truly yours,

Frank R. Kelley (s)
Chairman
Harry J. Blake (s)
Thomas J. Carty (s)
Daniel G. O'Connor (s)
C. Phillip Snowden (s)

Parks and
Recreation Commission of the
City of Boston "

Upon motion of Commissioner Carty, seconded by Commissioner Snowden, it was unanimously voted to sign the above-quoted letter and forward it to the Metropolitan District Commission.

****

APPENDIX C

CONTROL OF PHRAGMITES AUSTRALIS

The removal of selected patches of Phragmites Australis presents unique problems for park development and maintenance. The reed is tall, growing at the water's edge and reproduces itself vegetatively by rhizomes and layering (stalks will start new plants if in contact with wet soil).

Two control techniques have been explored in this study:

a) Regular mowing. Phragmites reeds can be temporarily controlled by cutting and removing vegetative growth at least twice a year--July and early October. It is possible that after several growing seasons this technique may result in permanent control of the reeds; particularly if the feeding population of muskrats is adequate to prevent new rhizome growth. Several pieces of mowing equipment exist which make it possible to cut Phragmites reeds growing on wetland or in water areas by using a tractor mounted sicle bar on an extended arm. See detail 14.

b) Shore treatment/dredging. Complete removal of the Phragmites root mass by dredging has proven successful in Leverett Pond, Brookline (Brookline Parks and Recreation Department). A dragline or large backhoe must remove all roots and growing medium (to a depth of 3-4 feet). Control of the reeds on wetland is accomplished by placing 2 feet of fill on top of the cut Phragmites stubble. Five inches of loam and a sod layer are then added to provide a lawn surface which can be maintained with standard mowers. See detail 14.

A combination of these methods appears to be the best means of control in the Fens. Dredging, filling, and sodding is most appropriate where a new, heavily used land/water edge is proposed to be established (Victory Garden Shoreline Park). Regular mowing can be used where Phragmites removal is desirable to only open views.

The following is a report on Phragmites control by James D. Lazell, Ph.D. and Associates:

MASSACHUSETTS AUDUBON SOCIETY
LINCOLN, MASSACHUSETTS 01773 · TEL. 617-259-9500

CONSERVATION
EDUCATION
RESEARCH

5 October 1976

BACK BAY FENS

by

James D. Lazell, Ph.D., Jonathan Coddington, and Katharine G. Field

The park land of the Back Bay Fens consists of the Muddy River, a zone of emergent vegetation, a higher "old field" sere, and mowed lawns with shade trees. We investigated the emergent vegetation zone, and (to a lesser extent) the adjacent old field sere. The emergent zone is the very wet area of the river edge, dominated by the giant reed Phragmites australis, but also including other plants such as pickerel weed, arrowhead, cattails, and sedges. The old field sere, which varies in extent, is the unmown area between the emergent zone and the lawns. It contains many of the weeds and wildflowers seen in abandoned fields; hence its name. We were specifically interested in two questions:

1. What are the wildlife and wildflower values of the area and how might these be enhanced?
2. What would be the impact of eliminating fifty percent of the emergent zone north of Agassiz Road, dominated by Phragmites reeds?

We visited the area on 4 October, 1976. Although there has not been a killing frost this autumn, the season is still a very poor one for estimating wildlife or wildflower populations. Consequently, we may readily have missed important species and overlooked valuable populations. To mitigate this we consulted Richard Forster, an ornithologist at this Society, and Carroll Wood, a botanist at Gray Herbarium, Harvard University. We used Haslam's copious works, and papers cited by her, to develop our opinions on Phragmites ecology and management (see J. Ecol. 59: 65-88, 1971, and J. Ecol.60: 585-610, 1972). We determined water pH in Muddy River (about 5), and soil pH within and out of the emergent zone dominated by Phragmites (both were about 5.5). We present our arguments and evidence following our conclusions:

1) Drastically reducing or eliminating Phragmites at all proposed sites, north and south of Agassiz Road along Muddy River, will probably greatly increase wildlife and wildflower populations, species diversity, and aesthetic values. It should be done.

2) Eliminating the actual emergent vegetation zone, by dredging under water and filling the land, would have catastrophic effects on wildlife and wildflowers, and would probably not get rid of Phragmites. If this is done at all (e.g., to increase lawn areas), it should be kept to an absolute minimum, not to exceed ten percent of the total Muddy River edge.

3) The present old field sere is greatly augmented in the northwestern area of the park, where gardens are planted and (often spora-

dically) tended. This is an area richer in wildlife (especially birds) and wildflowers than virtually any other in such an urban setting. Present land use here should be encouraged.

The rationale behind the first conclusion derives mainly from the depauperate nature of the Phragmites consociation. This far north, Phragmites characteristically fails to set seed and produces principally sterile (albeit attractive) tassles. Thus, food is unavailable for seed-eating birds. The substrate under most of the Phragmites at the proposed elimination sites is rather dry, so that rats, cats, and other predators have ready access to the areas; this means the Phragmites stands cannot be used effectively by nesting birds, at least along the Muddy River edge where cutting is recommended. About the only real wildlife value of the uniform Phragmites consociations is as muskrat food: muskrats eat the rhizomes. Muskrats can be expected to assist in Phragmites management if cutting is the method utilized, as they will eat the rhizomes that would give rise to new shoots.

There are several disjunct, insular areas of Phragmites in the Muddy River north of Agassiz Road; these do provide bird nesting sites and should not be eliminated: they are typically emergent from water.

The present duck population is of feral European and Central Flyway mallard stock, with black duck hybridization. These birds (albeit attractive to many people) have no more wildlife value than pigeons, starlings, or English sparrows.

If the Phragmites is mowed regularly twice a year (see below), we predict cattails, sedges, various grasses, arrowhead, pickerel weed, etc., to increase and occupy more of the emergent zone than at present. These species do serve as food and shelter for wildlife and are attractive to people. The increased diversity could only be regarded as beneficial. Redwing blackbirds, wrens, rails, and even herons and bitterns might be attracted to the cutover areas.

At present, the acidity of Muddy River (pH 5) is too great for salamanders, but various frogs, possibly toads, and a couple of turtle species (snapping and painted) might survive. Increased edge diversity, resulting from cutting Phragmites, would benefit these species.

The rationale behind the second conclusion derives in part from the tenacity of Phragmites and the habits of muskrats. Phragmites can grow right up through a meter or more of fill, and readily grows in a meter or more of water. Dredging and filling will not destroy the rhyzomes - the reeds' method of reproduction - and the fill would prevent muskrats eating them, at least initially.

The muskrats will be delighted by the new banks created, and can be predicted to riddle them like blocks of Swiss cheese in search of tasty rhizomes and high, dry homesites. The undermined banks will predictably collapse eventually.

In any case, the Phragmites shoots growing up through the new banks will necessitate mowing. Generating steep banks by dredging and filling seems to us to be a very expensive way to get nowhere.

In addition, filling the banks with silt and mud and creating lawn to the edge of the new, higher bank would effectively destroy both the emergent zone and the old-field sere.

Our third conclusion derives from the diversity of wildflowers we observed: stick-tight, daisy fleabane, tansy, ragweed, wild cucumber, lambs quarters, clover, golden rod, and at least two species of asters. As a wild area, this is a unique resource in Boston. We are told the habitat is excellent for some migrant song birds, especially seed eaters like song, white-throated, white-crowned, chipping, savannah, and fox sparrows, and juncos. We observed only the first two.

RECOMMENDATIONS

Phragmites rhizomes are most damaged by cutting the stems in their peak growing season, i.e. July, and by winter frost damage. Furthermore, shoots killed after their emergence period in the spring may not be replaced.

Therefore, the best way to eradicate the Phragmites is to mow it twice a year; once in July and once in early October. It is important that the second mowing take place before the reeds have withered, and it is also important that the cut sterms be removed at this time to thoroughly expose the rhizomes to frost damage.

A standard, "turnpike" style mowing machine, that drives on grass, and has a long cutting arm is ideal. Phragmites should be cut one or two feet above the land or water level. Stalks can readily be removed by hand (for that matter, the smaller or wetter areas proposed could be readily cut by hand).

SPECIES OBSERVED

Emergent vegetation:

- Reed, *Phragmites australis* (same as P. communis)
- Pickerel weed, *Pontederia cordata*
- Sedges, *Carex* sp. and *Scirpus* sp.
- Cattail, *Typha* sp.
- Arrowhead, *Sagittaria latifolia*
- Iris, *Iris* sp.
- Smartweeds, *Polygonum pensylvanicum* and *P*. *persicaria*
- Ducks, *Anas* sp. (mostly hybrids)
- Spider, *Tetragnatha* sp.

Old field:

- Stick-tight, *Bidens frondosa*
- Daisy fleabane, *Erigeron strigosus*
- Tansy, *Tanacetum vulgare*
- Ragweed, *Ambrosia artemisiifolia*
- Wild cucumber, *Echinocystis lobata*
- Lambs quarters, *Chenopodium album*
- Clover, *Trifolium* sp.
- Goldenrod, *Solidago* sp.
- Asters, *Aster novi-belgii* and *A*. *sagittifolius*
- Song sparrow, *Melospiza melodia*
- White-throated sparrow, *Zonotrichia albicollis*
- Spiders: *Clubiona* sp. and *Agalinopsis* sp.
- Cabbage butterfly, *Pieris rapae*
- Various beetles (Carabidae, Coccinellidae) and Aphids (Aphidae)
- Numerous other insects

[illegible]

HORN/OPD